SAF-B05-018 Horseshoe Landfill Residual Pesticide Sampling – Soil FINAL VALIDATION PACKAGE

COMPLETE COPY OF VALIDATION PACKAGE TO:

Jeanette Duncan

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MINITIALDATE 10-18-05

COMMENTS:

SDG

H3206

SAF-B05-018



Date: 5 October 2005

To: Bechtel Hanford Inc. (technical representative)

From: TechLaw, Inc.

Project: Horseshoe Landfill Residual Pesticide Sampling - Soil - Waste Site

600-270

Subject: PCB/Pesticide/Herbicide - Data Package No. H3206-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. H3206-LLI prepared by Lionville Laboratory Inc. (LLI). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample 10 Ju	e-Samble4Dare		Validations	Bare Till
J03CJ3	6/7/05	Soil	C	See note 1
J03CJ4	6/7/05	Soil	C	See note 1
J03CJ5	6/7/05	Soil	C	See note 1
J03CJ6	6/7/05	Soil	C	See note 1
J03CJ7	6/7/05	Soil	C	See note 1
J03CJ8	6/7/05	Soil	C	See note 1
J03CJ9	6/7/05	Soil	С	See note 1, 2 & 3
J03CH8	6/7/05	Soil	С	See note 1
J03CH9	6/7/05	Soil	С	See note 1
J03CJ0	6/7/05	Soil	C	See note 1
J03CJ1	6/7/05	Soil	C	See note 1
J03CJ2	6/7/05	Soil	С	See note 1
J03CH3	6/7/05	Soil	С	See note 1, 2 & 3
J03CH4	6/7/05	Soil	С	See note 1
J03CH5	6/7/05	Soil	C	See note 1
J03CH6	6/7/05	Soil	С	See note 1
J03CH7	6/7/05	Soil	С	See note 1

^{1 -} Pesticides by 8081A.

Data validation was conducted in accordance with the Bechtel Hanford Incorporated (BHI) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, February 2005). Appendices 1 through 5 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers

Appendix 2. Summary of Data Qualification

Appendix 3. Qualified Data Summary and Annotated Laboratory Reports

Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation

Appendix 5. Data Validation Supporting Documentation

^{2 -} PCBs by 8082 and chlorinated pesticides by 8151A.

DATA QUALITY OBJECTIVES

Holding Times

Sample data were assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Soil samples must be extracted within 14 days of the date of sample collection and analyzed within 40 days from the date of extraction.

If holding times are exceeded by less than two times the limit, all associated sample results are qualified as estimates and flagged "J" for detects and "UJ" for non-detects. If holding times are exceeded by greater than two times the limit, all associated detected sample results are qualified as estimates and flagged "J" and all non-detects are rejected and flagged "UR".

All holding times were acceptable.

Method Blank

Method blank analyses are performed to determine the extent of laboratory contamination introduced through sampling, sample preparation or analysis. At least one method blank analysis must be conducted for every 20 samples. Method blanks should not contain target compounds at a concentration greater than required quantitation limit (RQL). If target compounds are present, sample results less than five times the blank concentration are qualified as undetected and flagged "U". If the sample result is less than five times the blank concentration and less than RQL, the result is qualified as undetected and elevated to the RQL.

All method blank results were acceptable.

Field Blanks

One field blank (J03CJ9) was submitted for analysis. No analytes were detected in the field blank.

· Accuracy

Matrix Spike & Laboratory Control Sample

Matrix spike (MS) and laboratory control sample (LCS) analyses are used to assess the analytical accuracy of the reported data. The matrix spike is used to assess the effect of the matrix on the ability to accurately quantify sample concentrations.

Recoveries must fall within the range of 70% to 130%. If spike recoveries are outside control limits, detected sample results less than five times the spike concentration are qualified as estimates and flagged "J". Non-detected sample results with spike recoveries outside control limits are qualified as estimates and flagged "UJ". Sample results greater than five times the spike concentration require no qualification.

Due to a matrix spike recovery outside QC limits (122%), all detected 4,4-DDD results were qualified as estimates and flagged "J".

Due to the lack of a matrix spike, matrix spike duplicate and LCS analysis, all toxaphene results were qualified as estimates and flagged "J".

All other accuracy results were acceptable.

Surrogate Recovery

The analysis of surrogate compounds provides a measure of performance for individual samples. Matrix-specific surrogate compound recovery control windows have been established by the laboratory. When a surrogate compound recovery is outside the control window, all positively identified target compounds associated with the unacceptable surrogate recoveries are qualified as estimates and flagged "J". Non-detected compounds with surrogate recoveries less than the lower control limit are qualified as having an estimated detection limit and flagged "UJ". Non-detected compounds with surrogate recoveries above the upper control limit require no qualification.

All surrogate results were acceptable.

Precision

Matrix Spike/Matrix Spike Duplicate Samples

Matrix spike/matrix spike duplicate results provide matrix-specific information on the precision of the method for specific target compound classes. Precision is expressed as the relative percent difference (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample. For soil samples, results must be within RPD limits of plus/minus 30%. If RPD values are out of specification and the sample concentration is less than five times the spike concentration, all associated detected sample results are qualified as estimates and flagged "J". If RPD values are out of specification and the sample concentration is greater than five times the spike concentration, no qualification is required.

Due to the lack of a matrix spike and matrix spike duplicate analysis, all toxaphene results were qualified as estimates and flagged "J".

All other precision results were acceptable.

Field Duplicate Samples

One set of field duplicate samples (J03CJ7 & J03CJ8) was submitted for analysis. Field duplicates are compared using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

· Analytical Detection Levels

Reported analytical detection levels are compared against the Remaining Waste Sites RQLs to ensure that laboratory detection levels meet the required criteria. All undetected methoxychlor, toxaphene, dalapon, dichloroprop and 2,4-DB results exceeded the RQL. Under the BHI statement of work, no qualification is required.

· Completeness

Data Package No. H3206 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

The following minor deficiencies were noted:

- Due to a matrix spike recovery outside QC limits (122%), all detected 4,4-DDD results were qualified as estimates and flagged "J".
- Due to the lack of a matrix spike, matrix spike duplicate and LCS analysis, all toxaphene results were qualified as estimates and flagged "J".

Data flagged "J" indicates that the associated concentration is an estimate, but under the BHI statement of work, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

REFERENCES

BHI, MRB-SBB-A23665, *Validation Statement of Work*, Bechtel Hanford Incorporated, September 5, 1997.

DOE/RL-96-22, Rev. 4, 100 Area Remedial Action Sampling and Analysis Plan, U.S. Department of Energy, February 2005.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with the procedures herein are as follows:

- Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.
- UJ Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.
- Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.
- R Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.
- UR Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.
- NJ Indicates presumptive evidence of a compound at an estimated value.
 The data may not be valid for some specific applications (i.e., usable for decision-making purposes).
- Indicates presumptive evidence of a compound. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

Appendix 2

Summary of Data Qualification

PCB/PESTICIDE/HERBICIDE DATA QUALIFICATION SUMMARY*

Sog: H3206	REVIEWER.	Rraject: 600-270	'PAGE'1 '0F 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
4,4DDD	J	All detects	MSD
Toxaphene	J	All	No MS, MSD or LCS

^{* -} The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

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Laboratory: LLI	SDG: F	13206		1																	
Sample Number				1								<u> </u>		J03CJ9							
Remarks														E. Blank		L				<u> </u>	
Sample Date					-									6/7/05							
Extraction Date												-		6/12/05							
Analysis Date				 				 				 		6/15/05	_						
PCB	RQL	Result	Q	Result	a	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Aroclor-1016		NA		NA		NA	┌─	NA	\vdash	NA		NA		13	Ū	NA	П	NA		NA	
Aroclor-1221		NA	 	NA		NA		NA	┢	NA		NA		13	U	NA	1	NA		NA	
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Aroclor-1242		NA	┰	NA	 	NA .	\vdash	NA		NA		NA		13	U	NA		NA		NA	T -
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Sample Date		6/12/05		6/12/05		6/12/05		6/12/05		6/12/05		6/12/05		6/12/05		6/12/05		6/12/05		6/12/05	···
Extraction Date		6/14/05		6/14/05		6/14/05		6/14/05		6/14/05		6/14/05		6/14/05		6/14/05		6/15/05		6/15/05	
Analysis Date Pesticide	RQL		Q	Result	Q	Result	Q	Result	Q		Q		Q	Result	Q	Result	Iq		Q	Result	TQ.
Alpha-BHC	5			1.7		1.7		1.7	11	1.7		1.7		1.7			7 U	1.7			70
Beta-BHC	5			1.7		1.7		1.7		1.7		1.7		1.7			7 U		Ū		7 0
Delta-BHC	5			1.7		1.7		1.7		1.7		1.7		1.7			יטי	1.7			70
Gamma-BHC (Lindane)	5			1.7		1.7		1.7		1.7		1.7		1.7		1.7		1.7			ίŪ
	5			1.7		1.7		1.7		1.7		1.7		1.7		1.7		1.7			70
Heptachlor	5			1.7		1.7		1.7		1.7		1.7		1.7			7 U	1.7			7 U
Aldrin	5			1.7		1.7		1.7		1.7		1.7		1.7		1.7		1.7			7 U
Heptachlor Epoxide	5			1.7		1.7		1.7		1.7		8.2	<u> </u>	1.7			ν U	1.7			70
Endosulfan I Dieldrin	5			1.7		1.7		1.7		1.7		1.7	11	1.7		1.7		1.7			7 0
4,4'-DDE	5			150		140		220	۳_	540		640	<u> </u>	3.3		460		150		28	
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4.4'-DDD	5			5.9		1.9		6.3	_	12		13	_	3.3		69		7.8			SIU
Endosulfan Sulfate	5			3.3		3.4		3.3		3.3		3.3	_	3.3	_	3.4		3.3			3 U
4,4'-DDT	5			70		23		110		170		210	<u> </u>	3.3		420		92		9.1	
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Methoxychlor	5					17															
Endrin Ketone	5			3.3		3.4		3.3		3.3	_	3.3		3.3	_		ı U	3.3			3 U
Endrin Aldehyde	5			3.3		3.3		3.3		4.5		3.3		3.3		2.3		3.3			3 U
alpha-Chlordane	5			1.7		1.7		1.7		1.7		1.7		1.7			7 U	1.7			7/U
gamma-Chlordane	5			1.7		1.7		1.7		1.7		1.7		1.7			'U	1.7			7 U
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Sample Number		J03CJ1		J03CJ2		J03CH3		J03CH4		J03CH5		J03CH6		J03CH7							
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Analysis Date		6/15/05		6/15/05		6/15/05		6/15/05		6/15/05		6/15/05		6/15/05							
Pesticide			Q	Result	Q	Result	Q	Result		Result	Q		a		ø			I			
Alpha-BHC	5	1.7	U	1,7	Ü	1.7	U	1.7	Ü	1.7		1.8	ט	1.8	כ						
Beta-BHC	5	1.7	U	1.7	υ	1.7	U	1.7	Ü	1.7	Ü	1.8		1.8				J			
Delta-BHC	5	1.7	Ü	1.7	υ	1.7		1.7		1.7		1.8		1.8					1		$\bot \bot$
Gamma-BHC (Lindane)	_ 5	_ 1.7	U	1.7	Ü	1.7		1.7	ردا	1.7	υ	1.8		1.8	ادا					[
Heptachlor	5	1.7	Ü	1.7	Ü	1.7	U	1.7	دا	1.7	Ų	_1.8	υ	1.8	٦				T_{-}		
Aldrin	5	1.7		1.7		1.7		1.7	U	1.7	υ	1.8		1.8	5						
Heptachior Epoxide	5	1.7	U	1.7	U	1.7		1.7	حا	1.7	Ű	1.8	۲	1.8	٦			1			
Endosulfan I	5	1.7	υ	1.7	Ū	1.7	U	1.7	בו	1.7	U	1.8	וכ	36							
Dieldrin	5	1.7	υ	1.7	U	1.7		1.7	ے	1.7	Ú	1.8	כ	1.8	٦						Ţ
4,4'-DDE	5	310		51		3.4		150		78		190		1300							
Endrin	5	3.4	U	3.4	V	3.4	U	3.4	Ū	3.3	Ū	3.5	U	3.5	U						
Endosulfan II	5	3.4	U	3.4	U	3.4	U	3.4	U	3.3	Ū	3.5	บ	3.5						†	
4,4'-DDD	5	8.1		1.9		3.4		7.4		2.7		9.5		150					\top	1	\top
Endosulfan Sulfate	5	3.4		3.4		3.4		3.4		3.3		3.5		3.5			_	 	1		1
4,4'-DDT	5	110		24	•	3.4		82	·-	27	<u> </u>	140		1700	<u> </u>			 	1	 	+
Methoxychlor	5	17		17	Ū	17		17	Ū	17	υ	18	υ	18	U			 	+	 	+
Endrin Ketone	5	3.4		3.4	_	3.4		3.4		3.3		3.5		3.5				 	1-	 	1
Endrin Aldehyde	5	2.4		3.4		3.4		3.4		3.3		3.5		3.5			\vdash	 	+-	 	+
alpha-Chiordane	5		_	1.7		1.7		1.7		1.7		1.8		1.8			-	 	+	 	+
gamma-Chlordane	5			1.7		1.7		1.7		1.7		1.8		1.8			 	 	+-	 	+-
Toxaphene	5	170	_	170		170		170	_	170		180		180			 -	 	+		+-
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Laboratory applied non-del	ect qual	tiers "I" h	ave b	een include	d in i	his table to	- min	imize mies-ir	tern	retation of r	PRI He	All other	Guali	ifiére showr	Wen	annlied d	urina	validation	, -		

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Laboratory: Lionville Laboratory	oratory In	ic.																	
Case:	SDG: H	13206												·		 			
Sample Number		J03CJ9		J03CH3						<u> </u>			_	<u></u> _		 			
Remarks		E. Blank		L						<u> </u>		<u> </u>		<u></u> _	_				
Sample Date		6/7/05		6/7/05		<u></u>		<u></u>		<u> </u>						 			
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Analysis Date		6/17/05		6/17/05											_	 			
Chiorinated Herbicides	RQL	Result	Q	Result	Q	Result	Q	Result	<u> Q</u>	<u> </u>	<u> </u>				_	 		<u> </u>	 1
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Dicamba	100	67	<u> </u>	68		<u> </u>	<u>L</u> _	<u> </u>	1	Ĺ	1				↓	 نــــــــــــــــــــــــــــــــــــــ		L.	 \bot
Dichloroprop	100	170	Ū	170	U		<u>L_</u>			<u> </u>	<u> </u>		<u> </u>			 			 \perp
2,4-D	100	33	J_	34	ט			<u>L</u>	<u> </u>	<u> </u>	<u> </u>				_1				
2,4,5-TP (Silvex)	100	17	<u>J</u>	17	U				1			<u> </u>							 $\perp \perp$
2,4,5-T	100	17	J	17	U						<u> </u>				_]	 			
2,4-DB	100	170	J_	170	U		L		<u> </u>	<u> </u>	1		Ĺ		_				 $\perp \perp$
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Lionville Laboratory, Inc.

PCBs by GC

Report Date: 06/15/05 10:45 RFW Batch Number: 0506L713 Client: TNU-HANFORD B05-018 Work Order: 11343606001 Page: 1

	Cust ID:	J03CJ	9	J03CH	3	J03CH	3	J03CH	3	PBLKMY		PBLKMY BS	
Sample	RFW#:	007	7	013	3	013 M	5	013 MS	D	05LE0490-1	Œ1	05LE0490-1	
Information	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	1.0	00	1.0	00	. 1.0	00	1.0	00	1.0	00	1.0	00
	Units:	UG/F	KG	UG/I	KG	UG/I	K G	UG/I	KG	UG/1	(G	UG/I	KG
Surrogate:	Tetrachloro-m-xylene	81	*	102	*	92	*	98	*	90	*	90	*
	Decachlorobiphenyl	115	*	117	¥	112	*	120	¥	108	¥	111	ક
	====================================	.F======	-fl	*******	=fl==	===#=====	-=fl==		==fl	=========	=f1	*========	==f
Aroclor-1016		13	U	14	U	112	ક	125	¥	13	U	110	웋
Aroclor-1221		13	ช	14	U	14	U	14	U	13	ช	13	U
Aroclor-1232		13	U	14	U	14	U	14	U	13	บ	13	U
Aroclor-1242		13	Ū	14	U	14	Ū	14	U	13	Ū	13	Ū
Aroclor-1248		13	U	14	U	14	U	14	U	13	U	13	U
Aroclor-1254		13	ט	14	ט	14	ט	14	U	13	Ū	13	Ū
Aroclor-1260		13	บ	14	U	119	*	132	ł	13	Ū	118	8

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked. %= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

Client: TNUHANFORD B05-018 H3206 Work Order: 11343606001 Page: 1

Report Date: 06/17/05 13:40

J03CJ7 J03CJ8 J03CJ6 J03CJ4 J03CJ5 Cust ID: J03CJ3 004 005 006 RFW#: 001 002 003 Sample SOIL SOIL SOIL SOIL Matrix: SOIL SOIL Information 1.00 1.00 1.00 1.00 1.00 D.F.: 1.00 UG/KG UG/KG UG/KG UG/KG Units: UG/KG UG/KG Decachlorobiphenyl * 85 % 89 % 86 * 8 Surrogate: 94 ¥ 81 73 % 76 8 75 ¥ 84 왐 76 ł 95 * Tetrachloro-m-xvlene =====f1======f1=====f1=======f1==== 1.7 ប 1.7 U 1.7 U 1.7 U 1.7 U 1.7 U Alpha-BHC 1.7 U Beta-BHC 1.7 U 1.7 U 1.7 U 1.7 U 1.7 U Delta-BHC 1.7 U 1.7 U 1.7 U 1.7 U 1.7 U 1.7 U qamma-BHC (Lindane) 1.7 U 1.7 Ū 1.7 U 1.7 U 1.7 U 1.7 U Heptachlor____ 1.7 U 1.7 U 1.7 U 1.7 U 1.7 U 1.7 U Aldrin 1.7 U 1.7 U 1.7 U 1.7 U 1.7 U 1.7 U Heptachlor epoxide 1.7 U 1.7 U 1.7 U 1.7 U 1.7 U 1.7 U Endosulfan I_____ 1.7 U 1.7 U 1.7 U 1.7 U 1.7 U 8.2 Dieldrin _____ 1.7 U 1.7 U 1.7 U 1.7 U 1.7 U 1.7 U 4,4'-DDE 64 150 140 220 540 640 Endrin 3.3 U 3.3 U 3.4 U 3.3 U 3.3 U 3.3 U Endosulfan II _____ 3.3 U 3.3 U 3.4 U 3.3 D 3.3 U 3.3 U 1.9 25 4.4'-DDD 2.6 复丁 1 5.9 6.3 12 🏋 13 Endosulfan sulfate____ 3.3 T 3.3 U 3.4 Ü 3.3 U 3.3 U 3.3 U 4,4'-DDT 25 70 23 110 170 210 Methoxychlor 17 U 17 U 17 11 17 [] 17 U 17 U Endrin ketone 3.3 U 3.3 U 3.4 U 3.3 U 3.3 U 3.3 U Endrin aldehyde_____ 3.3 U 3.3 U 3.4 U 3.3 11 4.5 3.3 U alpha-Chlordane____ 1.7 U 1.7 U 1 7 U 1.7 U 1.7 U 1.7 U gamma-Chlordane____ 1.7 U 1.7 U 1.7 U 1.7 U 1.7 U 1.7 U Toxaphene 170 U 1 170 U T 170 U J 170 UT 170 U T 170 U J

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked. %= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

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RFW Batch Number: 0506L713

Report Date: 06/17/05 13:40

Lionville Laboratory, Inc.

Pesticide/PCBs by GC, CLP List

RFW Batch Number: 0506L713 Client: TNUHANFORD B05-018 H3206 Work Order: 11343606001 Page: 2

	Cust ID:	J03CJ9)	J03CH	3	J03CH9	•	J03CJ)	J03CJ	l.	J03CJ	2
Sample	RFW#:	007	, !	008) .	009)	01)	01:	i	01	2
Information	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	1.0	0	1.0	0	1.0	0	1.0	00	1.0	00	1.	00
	Units:	UG/K	(G	UG/F	(G	UG/K	(G	UG/I	(G	UG/I	(G	UG/	KG
Surrogate: Decachlorol	oiphenyl	93	*	88	*	92	*	102	*	95	*	94	*
Tetrachloro-	n-xylene	68	* =fl===	70	¥ £1	71	% €1	83	{ .=f]==	78	{ ==fl===	78	% ==fl
Alpha-BHC		1.7	ŭ U	1.7	U U	1.7	U	1.7	U	1.7	Ü	1.7	
Beta-BHC		1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	Ū
Delta-BHC		1.7	υ	1.7	U	1.7	บ	1.7	U	1.7	U	1.7	U
gamma-BHC (Lindane)		1.7	U	1.7	ט	1.7	บ	1.7	บ	1.7	U ·	1.7	
Heptachlor		1.7	Ū	1.7	U	1.7	U	1,7	บ	1.7	U	1.7	U
Aldrin		1.7	U	1.7	U .	1.7	U	1.7	Ū	1.7	U	1.7	U
Heptachlor epoxide		1.7	U	1.7	U	1.7	ַ	1.7	U	1.7	ប	1.7	U
Endosulfan I		1.7	U	1.7	υ.	1.7	Ŭ	1.7	U	1.7	Ū	1.7	บ
Dieldrin	·	1.7	U	1.7	U	1.7	U	1.7	บ	1.7	U	1.7	U
4,4'-DDE		3.3	U	460		150		26		310		51	
Endrin		3.3	U	3.4	ប	3.3	U	3.3	Ū	3.4	U	3.4	บ
Endosulfan II		3.3	บ	3.4		3.3	U	3.3	U	3.4	U	3.4	U
4,4'-DDD		3.3	U	69	I	7.8	1	3.3	U	8.1	5	1.9	115
Endosulfan sulfate	<u> </u>	3.3	U	3.4	U	3.3	U	3.3	U	3.4	U ·	3.4	-
4,4'-DDT	 	3.3	U	420		92		9.1		110		24	
Methoxychlor		17	U	17	U	17	ប	17	U	17	U	17	U
Endrin ketone		3.3	U	3.4	U	3.3	U	3.3	ប	3.4	Ū	3.4	Ū
Endrin aldehyde		3.3	Ü	2.3	J	3.3	U	3.3	U	2.4	J	3.4	U
alpha-Chlordane		1.7	U	1.7	Ū	1.7	U	1.7	U	1.7	Ū	1.7	U
gamma-Chlordane		1.7	Ū	1.7	U	1.7	บ	1.7	U	1.7	U	1.7	ΰ
Toxaphene		170	UJ	170	UJ	170	u J	170	UJ	170	υ J	170	υ 3

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked. %= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC



180 U 🍑

Lionville Laboratory, Inc.

Report Date: 06/17/05 13:40 Pesticide/PCBs by GC, CLP List

Client: TNUHANFORD B05-018 H3206 Work Order: 11343606001 Page: 3 RFW Batch Number: 0506L713 J03CH6 J03CH3 J03CH4 J03CH5 J03CH3 J03CH3 Cust ID: 015 016 014 013 013 MS 013 MSD RFW#: Sample SOIL SOIL SOIL SOIL SOIL SOIL Matrix: Information 1.00 1.00 1.00 1.00 1.00 1.00 D.F.: UG/KG UG/KG UG/KG UG/KG UG/KG Units: UG/KG 93 ¥ 92 Ł 94 91 101 Decachlorobiphenyl 101 % Surrogate: 79 ł 78 ¥ 83 ¥ 80 ł 75 * 83 * Tetrachloro-m-xylene =====fl========fl 1.7 Ū 1.8 U 1.7 U 100 Ł 1.7 U 91 Ł Alpha-BHC 1.8 U 1.7 U 1.7 U 96 ¥ Beta-BHC 1.7 U 90 ¥ 1.7 U 1.7 U 1.8 U 1.7 U 102 109 Delta-BHC 1.8 U 101 1.7 U 1.7 U 1.7 U 92 gamma-BHC (Lindane) 1.7 U 1.8 U 101 1.7 U Heptachlor____ 93 1.7 U 1.7 U 1.7 U 1.8 U 1.7 U 93 103 Aldrin 1.8 U 1.7 U 1.7 U Heptachlor epoxide 1.7 U 94 101 1.8 U 105 1.7 U 1.7 U 1.7 U 99 Endosulfan I ______ 1.7 U 1.8 U 109 1.7 U 1.7 U 102 Dieldrin _____ 78 190 150 4,4'-DDE 3.4 U 106 113 3.4 U 3.3 U 3.5 U Endrin 3.4 U 105 111 Endosulfan II____ 105 3.4 U 3.3 U 3.5 U 3.4 U 98 2.7 % 5 7.4 J 9.5 1 4,4'-DDD 122 * * 3.4 U 115 3.3 0 ▼ Endosulfan sulfate 3.4 U 96 103 3.4 U 3.5 U 27 4,4'-DDT 3.4 U 82 90 82 140 17 U Methoxychlor 17 U 158 159 17 U 18 U Endrin ketone 3.4 U 97 103 3.4 U 3.3 U 3.5 U Endrin aldehyde_____ 94 3.3 U 3.5 U 3.4 U 99 3.4 U alpha-Chlordane 1.7 U 95 * 1.7 U 102 1.7 U 1.8 U gamma-Chlordane 1.7 U 95 102 * 1.7 U 1.7 U 1.8 U 170 U 🎜 170 U**J** 170 UT

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked. %= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

170 U

Toxaphene

170 U



Report Date: 06/17/05 13:40

Lionville Laboratory, Inc.

Pesticide/PCBs by GC, CLP List

Client: TNUHAMFORD B05-018 H3206 Work Order: 11343606001 Page: 4 RFW Batch Number: 0506L713

		Cust ID:	J03CH7	7	PBLKMY		PBLKMY BS		
	Sample	RFW#:	017	7	05LE0490-1	Œ1	05LM0490-1	œ1	
	Information	Matrix:	SOIL		SOIL		SOIL		
		D. F. :	1.0	0 (1.0	00	1.0	00	
		Units:	UG/F	(G	UG/F	(G	UG/1	CG	
	Surrogate:	Decachlorobiphenyl	93	*	85	*	89	*	
	3 -	Tetrachloro-m-xylene	76	*	76	*	77	ક	
		。 三日年台北京亚省共享共享中国的西西省建筑代表表:	****	-fl		=f1	*****	=fl==	
	Alpha-BHC		1.8	บ	1.7	Ū	93	*	•
			1.8	Ü	1.7	U	88	*	
	Delta-BHC		1.8	U	1.7	U	100	¥	
	gamma-BHC (L:	indane)	1.8	U	1.7	U	93	*	
			1.8	U	1.7	Ū	92	ł	
	Aldrin		1.8	U	1.7	U	95	ŧ	•
	Heptachlor en	poxide	1.8	U.	1.7	U	96	*	•
			36		1.7	U	96	¥	
			1.8	U	1.7	ָד י	99	¥	-
	4,4'-DDE		1300		3.3	U	107	*	
			3.5	Ū	3.3	ับ	100	*	
O	Endosulfan I	I	3.5	U	3.3	Ū	96	*	
	4,4'-DDD		150	1	3.3	U	108	8	
38	Endosulfan su	ılfate	3.5	_	3.3		95	*	
W			1700		3.3	U	100	*	
	Methoxychlor		18	U	17	U	133	*	
	Endrin ketone	9	3.5	Ū	3.3	U	94	*	
	Endrin aldehy	yde	3.5	Ū	3.3	U	90	*	•
	alpha-Chlorda	ane	1.8	U	1.7	U	95	્ક્ર	
		ane	1.8	U	1.7	U	96	*	
	Toxaphene		180	ט 🤇	170	U	170	U	

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked. %= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

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Report Date: 06/17/05 12:39

Lionville Laboratory, Inc.

Herbicides, Special List

Client: TNUHANFORD B05-018 H3206 Work Order: 11343606001 Page: 1 RFW Batch Number: 0506L713 J03CH3 PBLKNA PBLKNA BS Cust ID: J03CJ9 **J03CH3** J03CH3 013 MS 05LE0499-MB1 05LE0499-MB1 013 MSD 007 013 Sample RFW#: SOIL SOIL SOIL SOIL Information Matrix: SOIL SOIL D.F.: 1.00 1.00 1.00 1.00 1.00 1.00 ug/kg ug/kg ug/kg ug/kg ug/kg Units: ug/kg DCAA ¥ 130 ł Surrogate: 110 41 ł 48 48 119 ----fl===== 170 U 170 U ¥ 170 U Dalapon 45 103 67 U ł 67 U Dicamba 68 U 39 ł 39 115 ł Dichloroprop 170 U 170 U 55 49 ¥ 170 U 119 ≹ 2.4-D 33 U 34 U 33 32 ł 33 U 117 왐 2,4,5-TP (Silvex) 17 U 17 U 60 64 ł 17 U 127 ł 2,4,5-T 17 บ 17 U 34 34 ł 17 U 127

170 U

17 U

45

89

170 U

17 ປ

50

79

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170 U

17 U

136

134

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked. %= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP OC

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2,4-DB

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Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation



Case Narrative

图形 有性的复数形式最高处理的

Client: TNU-HANFORD B05-018

LVL #: 0506L713

SDG/SAF # H3206/B05-018

W.O. #: 11343-606-001-9999-00 Date Received: 06-09-2005

PCB

Two (2) soil samples were collected on 06-07-2005.

The samples and their associated QC samples were extracted on 06-12-2005 and analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedures on 06-15-2005. The extraction procedure was based on method 3540C and the extracts were analyzed based on method 8082.

The following is a summary of the QC results accompanying the sample results and a description of any problems encountered during their analyses:

- 1. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.
- 2. Samples were extracted and analyzed within required holding time.
- 3. The samples and their associated QC samples received Silica Gel, Copper-Sulfur and Sulfuric Acid cleanups according to Lionville Laboratory SOPs based on SW846 methods 3630C, 3660A and 3665A respectively.
- 4. The method blank was below the reporting limits for all target compounds.
- 5. All surrogate recoveries were within acceptance criteria.
- 6. The blank spike recoveries were within acceptance criteria.
- 7. All matrix spike recoveries were within acceptance criteria.
- 8. The initial calibrations associated with this data set were within acceptance criteria.
- 9. The continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.
- 10. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the laboratory Manager or a designee, as verified by the following signature.
- 11. LvLI is NELAP accredited by the state of Pennsylvania and holds over 20 additional state accreditations. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.

Iain Daniels

Laboratory Manager

Lionville Laboratory Incorporated

Date

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The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 1 1 pages.

Occupant



Case Narrative

Client: TNU-HANFORD B05-018

LVL #: 0506L713

SDG/SAF # H3206/B05-018

W.O. #: 11343-606-001-9999-00 Date Received: 06-09-2005

CHLORINATED PESTICIDES

Seventeen (17) soil samples were collected on 06-07-2005.

The samples and their associated QC samples were extracted on 06-12-2005 and analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedures on 06-14,15-2005. The extraction procedure was based on method 3540C and the extracts were analyzed based on method 8081A.

The following is a summary of the QC results accompanying the sample results and a description of any problems encountered during their analyses:

- 1. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.
- 2. Samples were extracted and analyzed within required holding time.
- 3. Samples and their associated QC samples received a Copper-Sulfur cleanup according to Lionville Laboratory SOPs based on SW846 method 3660A.
- 4. The method blank was below the reporting limits for all target compounds.
- 5. All surrogate recoveries were within acceptance criteria.
- 6. All blank spike recoveries were within acceptance criteria.
- 7. One (1) of forty (40) matrix spike recoveries was outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
- 8. The initial calibrations associated with this data set were within acceptance criteria.
- 9. The continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.
- LvLI is NELAP accredited by the state of Pennsylvania and holds over 20 additional state accreditations. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.
- 11. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the laboratory Manager or a designee, as verified by the following signature.

Iain Daniels

Laborator√ Manager

Lionville Laboratory Incorporated

som\r:\group\data\pest\tnu hanford\0506-713.pes

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data.

Therefore, this report should only be reproduced in its entirety of 1 5 pages.

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LIONVILLE LAD O PATORY S	ample Discrepancy Report	(SDR#	: 056CZ6V
Initiator. m.	Batch: 0506 L 7/3 Samples: -0/3 msn Method: WeadMcAWW/CLP/	Parameter: Matrix:	0608H 5ecc 00180490
1. Reason for SDR a. COC Discrepancy Tech Profile		ampler Error on C-O-C	
b. General Discrepancy Missing Sample/Extract Cor Hold Time Exceededinst	on Error Wrong Test Code Of Intainer Broken Wrong Sar <u>ufficient Sample</u> Preservation Amenable to Analysis	mple PulledLat	ed ID's Tilegible zeved Past Hold
c. Problem (Include all relevant specific			•
- ms, ns were ok - no hits for DAD in sumple	nigh @122% (Ruge:00-120).		
2. Known or Probable Causes(s)			
3. Discussion and Proposed Action Re-log	Other Description:		
Entire BatchFollowing Samples: Re-leachRe-extractRe-digestRevise EDDChange Test Code toPlace On/Take Off Hold (circle)	Jarrote		
4. Project Manager Instructionssignatus Concur with Proposed Action Disagree with Proposed Action; See Include in Case Narrative Client Contacted: Date/Person Add Cancel		105	
5. Final Actionsignatura/date:			
Route Distribution of Completed SDR X Initiator X Lab General Manager: M. Tayk X Project Mgr. Stone Johnson Has X Technical Mgr. Wesson Daniels X QA (file): Alberts Data Management Feldman Sample Prep: Beegle/Kiger	Route Distributio Metals: or Inorgar slett GC/LC	n of Completed SDR Beegle nic: Perrone : Kiger rchlak/Layman Melnic Soos	• ·



Case Narrative

Client: TNU-HANFORD B05-018

LVL#: 0506L713

SDG/SAF # H3206/B05-018

W.O. #: 11343-606-001-9999-00

Date Received: 06-09-2005

HERBICIDE

Two (2) soil samples were collected on 06-07-2005.

The samples and their associated QC samples were extracted on 06-14-2005 and analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedures on 06-17-2005. The extraction and analysis procedures were based on method 8151A.

The following is a summary of the QC results accompanying the sample results and a description of any problems encountered during their analyses:

- 1. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.
- 2. Samples were extracted and analyzed within required holding time.
- 3. The method blank was below the reporting limits for all target compounds.
- 4. All surrogate recoveries were within acceptance criteria.
- 5. All blank spike recoveries were within acceptance criteria.
- 6. All matrix spike recoveries were within acceptance criteria.
- 7. The initial calibrations associated with this data set were within acceptance criteria.
- The continuing calibration standards analyzed prior to sample extracts were within acceptance 8. criteria.
- I certify that this sample data package is in compliance with SOW requirements, both 9. technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the laboratory Manager or a designee, as verified by the following signature.

aboratory Manager

Lionville Laboratory Incorporated

som\r:\group\data\herb\tnu\0506-713 doc The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 11 pages. ()()()()24

05061713

	Bechtel Hanford Inc.			CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST						T	B05-018-001 Page 3			 માં વ	
	Collector				Contact Bowers	Telenho 531-0	ne No.		Į	Project Coordinator KESSNER, JH		Price Code D		Data Ti	irnaround
	Florseshoe Landfill Residual Pesticide Sampling - Soil Ice Chest No. FR C 0 3 1 0 6 Shinned To EBERLINE SERVICES LIONVILLE Field EL Offsit				Location Shoe Landfill					SAF No. B05-018		Air Qualit	ly .	7	day
				Id Log EL 117	zbook No. 73-5		COA R6027020	COA 602702000		Method of Shir Fed Ex		·			
				Offsite Property No. A 0502		238	38		Bill of Lading/Air Bill No.					ı	
	POSSIBLE SAMPLE HA	AZARDS/REMARKS		- [ĺ	ĺ		ĺ		Cool 4	<u>, </u>	1	1	
٠	· MA		·	_	Preservation	None aG	Cool 4C	Cool 4C	Cool 40	Cool 4C	aG		- 	 	
	C :- 1.11 Hing and h	nu Stanesa		1.	Type of Container									 -	
	N A	Special Handling and/or Storage			No. of Container(s)	1	1	1			'				<u> </u>
	10 74			_ [_	Volume	250mL	250mL	250mL	500mI		250m				
•		Sample anal	.YSIS		to the	See item (1) in Special Instructions.	VOA - 8260A (TCL)	Semi-VOA - 8270A (TCL)	Chloro- Herbicide EPAB151 Dichloroph yecesic ac	s - 8081 2,4- enox	PCBs · 1	1082			
		· · · · · · · · · · · · · · · · · · ·				W 4 13/230			Train of Jan	and the second second				Market Commission	
	Sample No.	Matrix *	Sample Dat		Sample Time	77/200	9 (d) 4		是加度	25.00		17 46 245		100	
ā	J03CJ3	SOIL	6-7-0	5_	0919	ļ		ļ	 	X			<u> </u>	II /0	
Ξ	J03CJ4	SOIL			0822		[<u> </u>	<u> </u>	<u> </u>			1/	
00025	J03CJ5	SOIL			0824			<u></u>		X				13	
N	J03C16	SOIL			0827					<u> </u>	<u> </u>			()	
سؤ	J03CJ7	SOIL			0830	<u> </u>			<u> </u>	X	<u> </u>			14	<u> </u>
	CHAIN OF POSSES			n/Print Names SPECIAL INSTRUCTION					TIONS					Matrix *	
	Refinguished By/Removed From Date/Time Received By/Stor		2(3728 6-7-05/1615 Date/Time OALESpell 6805 1020			Chron Zine	(1) ICP Metals - 6010A (SW-846) Antimony, Arsenic, Baristo Chromium, Cobalt, Copper, Lead, Manganese, Molybdenum, N Zinc}: Mercury - 7471 - (CV)								
•	Relinquished By/Removed From Date/Time Received By/Stor SJOALCA/SLA 6805 1030 & FED E Relinquished By/Removed From Date/Time Received By/Stor										DS=Drum Solids DL=Drum Liquids T=Tissuc Wi=Wipe L=Luptid V=Vepctation				
	Relinquished By/Removed From Date/Time Received By/Store				· <u>·</u>	le Time	Rel	inquish sam #ZCon_C	ales from	3728					N=Other
	Relinquished By/Removed From Date/Time Received By/Stor			y/Stored In Date Time									\		
	LABORATORY Receive SECTION	d By				Titl	ie		···-				ſ	Pale/Time	· ·
	FINAL SAMPLE Dispusa DISPOSITION	l Method				·		Dispo	used By		-			Date/Time	

Bechtel Hanford Inc.			CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST B05-018-001 Page							Page 🛓	ot 4		
Collector Doug Bowers				Company Contact Telephone No. Doug Bowers 531-0701				Project Coordinator KESSNER, JH Price Code			Data Tur		
Project Designation Horseshoe Landfill Residu	al Pesticide Sampling - S		ling Location rse Shoe Landfill					SAF No. B05-018		Air Quality		7 a	ا و د
Ice Chest No.	03 106		Logbook No. 1173-5		COA R6027020			Method of Ship Fed Ex	ment				' <u>*</u>
Shinned To EBERLINE SERVICES	LIONVILLE	Offsit	e Property No.	250	238			Bill of Lading	'Air Bill I	No. Se2	505/2	د	,
POSSIBLE SAMPLE HAZ	ZARDS/REMIARKS	•	Preservation	None /	Cool 4C	Cool 4C	Cool 40	Cool 45	Cool 40	C.			
NA	8 4		Type of Container	aG	#G	aG	#G	aG	aG				<u> </u>
Special Handling and/or	r Storage		No. of Container(s)	1	1	1	1	1	1				
NA			Volume	250mL	250mL	250mL	500m1	. 120mL	250ml	-			
	SAMPLE ANAI	LVSIS		See item (1) in Special Instructions.	VOA - 8260A (TCL)	Semi-VOA - B270A (TCL)	Chloro- Herbicides EPAB151 Dichlorophi yscetic sci	s - 80\$ E 2,4- enox	PC8s - 80	382		,	
Sample No.	Matrix *	Sample Date	Sample Time		3248 W				5. P (2)		S. Str. St.	a Arch	35.444
J03CJ8	SOIL	6-7.0	5 0971					X				#/	
J03CJ9	SOIL	6-7-05	0730	 \	<u> </u>	K	<u> </u>	_ 	2			Full	40Ye
CHAIN OF POSSESSI	ION	Sign/Prin	Names	<u></u>	SPEC	IAL INSTR	UCTION	ls					Matrix *
Relinquished By/Removed From SJALUS ASSAURANCE Relinquished By/Removed From	Date/Time C \$ 0 \$ /030 Date/Time	Received By/Stor	ed in Di C 3 7 18 6 - 7 - ed in Di C 6 8 ed in Di C 6 8 ed in Di C 6 8 ed in Di C 6 9 - 6 5	ate/Time O S //O3 ate/Time pte/Time //OCC ate/Time	(1) ic Chron Zinc;	P Metals - 60	10A (SW-8 Copper, Lea 71 - (CV) Di available	46) [Antimony. Aid. Manganese, Me Manganese, Me e to m 3728		inn, Beryllium, Bo , Nickel, Selenium			S=Soil SE=Sedimen SO=Solid SI=Shidge V = Water O=CHI A=Air DS=Druss Solid T=Tissue W=Wipe L=Liqued L=Liqued L=Liqued L=Ceptaison L=Cther
Relinquished By/Removed From	Date/Time	Received By/Stor	ed In D	ate/Time			,						1
Relinquished By/Removed From LABORATORY Received I SECTION	····	Received By/Stor	ed In Di	ate/Time							D	ale/Time	<u> </u>

	Bechtel Hanfo	ord Inc.	T	CHAIN OF CUS	TODY/SAMPLE ANALYSIS REQUEST					T	B05-018-001 Page 2			ol Ŧ
	Collector Doug Bowers			Company Contact Telephone No. Doug Bowers 531-0701				roject Coord ESSNER, JH		Price Code D		Data Tu	irnarousil	
	Project Designation Horseshoe Landfill Residual Pesticide Sampling - Soil Ice Chest No.		1 '	mpling Location Horse Shoe Landfill		- <u>-</u> -			AF No. 05-018		Air Quality	Y 	7 d.	y
				ld Logbook No. EL 1173-5		COA R6027020	000	Method of Shipment Fed Ex						
	Shinned To EBERLINE SERVICES (LI		on	isite Property No.	050	238	1	Bi	iff of Lading	/Air Bill i	No. 5 675	5057C		1
	POSSIBLE SAMPLE HAZA	ARDS/HEMARKS		Preservation	None	Cool 4C	Cool 4C	Cool 4C	Civil 4C	Cool 40	-			
	ИД Special Handling and/or S	Storage		Type of Container	a.G	яG	#G	∍G	aG	-G				
1	MA-	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		No. of Container(s)	1	1	1	1 1	1201	250-1		<u> </u>	 	ļ
		<u> </u>		Volume	250mL	250mL	250mL	500mL	120mL	250ml				
		SANIPLE ANAL	YSIS -		See item (1) in Special Instructions.	VOA - \$260A (TCL)	Semi-VOA - 8270A (TCL)	Chloro- Herbicides - EPA\$151 (2,4 Dickloropheno: yacetic acid]		PCBs - 80	N2			
ŀ	Sample No.	Matrix *	Sample Da	te Sample Time			3.05 /6	W. F.	and the					Mark 1
ŀ	J03CH8	SOIL	6-7-0	5 0804					X				Ħ٢	
Ŀ	J03CH9	SOIL		0807					X				6	
Ŀ	J03CJ0.	SOIL		0811					X				7	
Ŀ	J03CJ1	SOIL		0813					X				1	12
Ŀ	J03CJ2	SOIL	V	0816					X]	1	
R	CHAIN OF POSSESSIO		Sign/Pr Received By/S	int Names Stored in D	ate/Time /		IAL INSTR							Matrix * 2
A R	Caughower Bow Relinquiented By Removed From REFIC 3728 65 Relinquished By Removed From BJOALE SIALL 686	0 5 10 30	Received By/S Received By/S	2C 3728 6 - 1 Stored in Di WACL 6808	7 - 05/14 ate/Time	Chron	CP Metals - 601 nium, Cobalt. C : Mercury - 747	opper Lead.) (Antimony, A Manganese, M	rsenic, Bar olybdennin	ium, Beryllium, B , Nickel, Selenium	oron, Cadimum n, Silver, Vanad	ium,	S=Soil SE=Sediment SO=Soild SI=Sindge IV = TVater O=Oil A=Alir US=Usens Solids Dt. **Ottom Legald
R	dingli hed the Removed From	Date/Fine	Received IVAS	-1 69-05	ote/Time									T=Tissue WI=Wipe L=Lkpad
1	elinquished By/Removed From	Date/Time	Received By/S		ate/Time	i	Personnel no relinquish sa Ref# <u>2C</u> on	mples from	3728					X=Vegetation X=Other
L		elinquished by Removed From												
1	LABORATORY Received By SECTION				Tid	e .						Da	nte/Time	
	FINAL SAMPLE Disposal Me DISPOSITION	thod					Dispos	sed By				D	ate/Time	

Bechtel Hanford Inc.			CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST B05-018-001 Page 1 of								of 4		
Collector Doug Bowers			Company Contact Telephone No. Doug Bowers 531-0701 Project Coordinator KESSNER, JH						Price Code	rice Code Data Turnaround			
Project Designation Horseshoe Landfill Residual	Pesticide Sampling - So		ling Location rse Shoe Landfill					SAF No. B05-018		Air Qualit	y . ^	7 de	/
Ice Chest No. ERC 03106			Loebook No. 1173-5		COA R6027020			Method of Shir Fed Ex	pmest	, 			/ .
Shinned To	EBERLINE SERVICES (LIONVILLE)			7501	138			Bill of Lading	/Air Bill	No. BEE OSPC			
POSSIBLE SAMPLE HAZ							1						
	•		Preservation	None	Cool 4C	Cool 40g	Cool 4		Cool 4	<u> </u>			1
Special Handling and/or S	Storage		Type of Container	■G	aG	aG	ıG	G	aG −		<u> </u>	· 	<u> </u>
	J		No. of Container(s)	1 250-1	350-1	350-1	500ml	L 120mL	250m				
			Volume	250mL	250mL	250m).	Jooma		<u> </u>			·	
				See item (1) in Special Instructions.	VOA - 8260A (TCL)	Semi-VOA - 8270A (TCL)	Chloro Herbicide EPA8151	s - 8061 {2,4-	PCBs - B	1082			
	- SAMPLE ANAI	LYSIS			'		DicMoroph yacetic ac						1
						25-10-0-32-0	47.42-6.00		******			in the second second	
Sample No.	Matrix *	Sample Date	Sample Time								or:		
J03CH3	SOIL	6-7-0		X	k	<u> </u>	<u> </u>	<u> </u>	1		<u> </u>	stocke,	70
J03CH4	SOIL		0752	 	<u> </u>			X				#/	<u> </u>
J03CH5	SOIL		0755	<u> </u>	ļ			X_			4	1	
J03CH6	SOIL		0759					<u> </u>				1	
J03CH7	SOIL		0801					<u> </u>				4	
CHAIN OF POSSESSIO		Sign/Prin			SPEC	IAL INSTR	UCTION	NS .				· · ·	Matrix *
Refinquished By/Removed From By/Removed From PEF-ZC 3728 (Relinquished By/Removed From Relinquished By/Removed	Date/Time Date/Time	Received By/Stor	(1719 6.76) ed in Da Mil 680:	ne/Time	Chron Zinc);		opper, Lea	346) (Antimony, A ad, Manganese, M					S=Soll SE=Sediment SO=Solid SI=Studge W = Water O=Oit
SUGALES/Alde	ERC 6805 107		X										A#Ak DS=Drum Solk DL=Orum Liqu
Relinguished Bs/Removed From	Date/Time	Received by nos	ed In 6 405 Da	te/Time									T=Tissue Wi=Wipe L=Liquei
Relinquished By/Removed From Date/Time Received By/Stored In Date					Re	rsonnel not a clinquish sam f#Con(available Pies from	lo .					V=Vegetation X=Other
Relinquished By/Removed From	Date/Time	Received By/Stor	ed In Da	te/Time		#_ <u><_</u> on_(0/8/	25					
LABORATORY Received By SECTION			· · · · · · · · · · · · · · · · · · ·	Tiql	e	····					Da	te/Time	
FINAL SAMPLE Disposal Me DISPOSITION	NAL SAMPLE Disposal Method Disposed By Date/Time												

Appendix 5

Data Validation Supporting Documentation

VALIDATION LEVEL:	A	В	(c)	D	E	<u>. </u>
PROJECT:	600-270		DATA PACKAG	E: H320	ان ان	
VALIDATOR:	TII	LAB: LL	\mathcal{I}	DATE: 9/	20/05	. <u> </u>
<u> </u>	<u></u>		SDG:	3206		
		ANALYSES	PERFORMED			
SW-846 8081	SW-846 8081 (TCLP)	SW-846 8082	SW-846 8081 (TCLP)	81517		
SAMPLES/MAT	RIX					
J03cH3	J03CH4	JO3CHS	JUZCHY	JU3CH7		
J03CJ9	J03CH8	J03 CH9	otscot	Joseps		
103053	303074	703075	JozeJG	703078		
703677	J036J1					
					Soil	
Comments:	tion documentation	present?			1 CS	
Initial calibrations Continuing calibra	acceptable?ations acceptable?	MANCE AND CAI			Yes	No
Calculation check	acceptable?	***************************************	, 4,	***************************************	Yes	No 1
		ble?				No \1
Comments:						

3. BLANKS (Levels B, C, D, and E)			
Calibration blanks analyzed? (Levels D, E)	Yes	No(N/A
Calibration blank results acceptable? (Levels D, E)	Yes	No	N/A
Laboratory blanks analyzed?	Yes	No	N/A
Laboratory blank results acceptable?	(Y)s	No	N/A
Field/trip blanks analyzed? (Levels C, D, E)		No	N/A
Field/trip blank results acceptable? (Levels C, D, E)	Yes	1	N/A
Transcription/calculation errors? (Levels D, E)	Yes	No	(N/A)
Comments:			$\stackrel{\smile}{-}$
			_
	_		
	•	-	
4. ACCURACY (Levels C, D, and E)	\bigcirc		
Surrogates analyzed?			
Surrogate recoveries acceptable?			_ \
Surrogates traceable? (Levels D, E)			$\overline{}$
Surrogates expired? (Levels D, E)			
MS/MSD samples analyzed?			
MS/MSD results acceptable?	Yes	No	N/A
MS/MSD standards NIST traceable? (Levels D, E)	Yes	No	N/A
MS/MSD standards expired? (Levels D, E)			
LCS/BSS samples analyzed?			
LCS/BSS results acceptable?	Yes	No	N/A
Standards traceable? (Levels D, E)	Yes	No	N/A
Standards expired? (Levels D, E)	Yes	No	N/A
Transcription/calculation errors? (Levels D, E)	Yes	No	N/A
Performance audit sample(s) analyzed?	Yes	No	N/A
Performance audit sample results acceptable?		No	N/A
Comments: 450 4,4-DDD- 12290 Jal	dele	<u>L</u>	
303c 53			
4-			
no toxplu us fusD/LCS		_	

5. PRECISION (Leve	s C, D, and E)		
Duplicate RPD values accepta	ble?	Yes	No N/A
Duplicate results acceptable?		Y9s	No N/A
MS/MSD standards NIST trac	eable? (Levels D, E)	Yes	No (NA)
MS/MSD standards expired?	(Levels D, E)	Yes	No NA
Field duplicate RPD values ac	ceptable?	(ve)	No N/A
Field split RPD values accept	able?	Yes	No NA
Transcription/calculation erro	rs? (Levels D, E)	Yes	No NA
Comments: NO	oxapin ms/msp- Jag		
·.			·
	· · · · · · · · · · · · · · · · · · ·	·	·
	·		
6. SYSTEM PERFOR	MANCE (Levels D and E)		6
Chromatographic performanc	e acceptable?	Yes	No /N/A
Positive results resolved acce	ptably?	Yes	No N/A
Comments:			
		·	
<u> </u>			·
			•
7. HOLDING TIMES	(all levels)		
Samples properly preserved?		/yaş	No N/A
Sample holding times accepta	ble?		No N/A
Comments:		$\overline{}$	
		·	
			···

8. COMPOUND IDENTIFICATION, QUANTITATION, AND DE	TECTION LIMITS (all
levels)	
Compound identification acceptable? (Levels D, E)	
Compound quantitation acceptable? (Levels D, E)	
Results reported for all requested analyses?	Ye No N/A
Results supported in the raw data? (Levels D, E)	
Samples properly prepared? (Levels D, E)	Yes No (N/A
Detection limits meet RDL?	Yes No N/A
Transcription/calculation errors? (Levels D, E)	Yes No WA
Comments:	
dicamba, dichlorepropy 2,4-DB, toxap	lere methoryelor
	<u> </u>
9. SAMPLE CLEANUP (Levels D and E)	\wedge
Fluoricil ® (or other absorbent) cleanup performed?	Yes No N/A
Lot check performed?	Yes No N/A
Check recoveries acceptable?	Yes No N/A
GPC cleanup performed?	Yes No N/A
GPC check performed?	Yes No N/A
GPC check recoveries acceptable?	Yes No N/A
GPC calibration performed?	Yes No N/A
GPC calibration check performed?	Yes No N/A
GPC calibration check retention times acceptable?	Yes No N/A
Check/calibration materials traceable?	Yes No N/A
Check/calibration materials Expired?	Yes No N/A
Analytical batch QC given similar cleanup?	Yes No N/A
Transcription/Calculation Errors?	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \
Comments:	<u> </u>
	·
	· · · · · · · · · · · · · · · · · · ·

Date:

5 October 2005

To:

Bechtel Hanford Inc. (technical representative)

From:

TechLaw, Inc.

Project:

Horseshoe Landfill Residual Pesticide Sampling - Soil - Waste Site

600-270

Subject: Volatile - Data Package No. H3206-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. H3206 prepared by Lionville Laboratory Inc. (LLI). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample 19 Sample Pare M. Vicial Salva Validation										
J03CJ9	6/7/05	Soil	С	8260C						
J03CH3	6/7/05	Soil	С	8260C						

Data validation was conducted in accordance with the Bechtel Hanford Incorporated (BHI) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, February 2005). Appendices 1 through 5 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers

Appendix 2. Summary of Data Qualification

Appendix 3. Qualified Data Summary and Annotated Laboratory Reports

Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation

Appendix 5. Data Validation Supporting Documentation

DATA QUALITY OBJECTIVES

Holding Times

Analytical holding times were assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Samples must be analyzed within 14 days of the date of sample collection.

If holding times are exceeded, but not by greater than two times the limit, all associated sample results are qualified as estimates and flagged "J" for detects and "UJ" for non-detects. If holding times are exceeded by greater than two times the limit, all associated detectable sample results are qualified as estimates and flagged "J" and all non-detects are rejected and flagged "UR".

All holding times were met.

Method Blanks

Method blank analyses are conducted to determine the extent of laboratory contamination introduced through sampling, sample preparation and analysis. At least one acceptable method blank analysis must be conducted for every 20 samples. No contaminants should be present in the method blank. Analytical results for analytes present in any sample at less than five times the concentration of that analyte found in the associated blank are qualified as non-detects and flagged "U". Common laboratory contaminants present in samples at less than ten times the concentration of that analyte found in the associated blank are qualified as non-detects. If a sample result is less than the CRQL and is less than five times (or less than ten times for lab contaminants) the highest associated blank result, the sample result value is raised to the CRQL level and qualified as undetected "U".

Due to method blank contamination, all methylene chloride results were qualified as undetected, raised to the RQL and flagged "U".

All other method blank results were acceptable.

Field Blanks

One equipment blank (J03CJ9) was submitted for analysis. No analytes were detected in the field blank.

· Accuracy

Matrix Spike/Matrix Spike Duplicate & Blank Spike Recoveries

Matrix spike/matrix spike duplicate analyses are used to assess the analytical accuracy of the reported data and the effect of the matrix on the ability to accurately quantify sample concentrations. Matrix spike/matrix spike duplicate analyses are performed in duplicate using five compounds for which percent recoveries must be within a range of 50-150% or within laboratory control limits. If spike recoveries are outside control limits, detected sample results less than five times the spike concentration are qualified as estimates and flagged "J". Undetected sample results with spike recoveries below control limits are qualified as estimates and flagged "UJ". Undetected sample results are not qualified if the spike recovery is above control limits. Sample results greater than five times the spike concentration require no qualification.

All accuracy results were acceptable.

Surrogate Recovery

The analyses of surrogate compounds provide a measure of performance for individual samples. Matrix-specific surrogate compound recovery control windows have been established by the EPA CLP program. If two surrogates of the same class of compounds (base/neutral or acid) are out of control limits, all associated sample results greater than the contract required quantitation limit (CRQL) are qualified as estimates and flagged "J". Sample results less than the CRQL and below the lower control limit are qualified as estimates and flagged "UJ". Sample results less than the CRQL with recoveries above the upper control limit require no qualification. If a surrogate recovery is less than 10%, detects are qualified as estimates and flagged "J" and nondetects are rejected and flagged "UR".

All surrogate results were acceptable.

Precision

Matrix Spike/Matrix Spike Duplicate Samples

Matrix spike (MS)/matrix spike duplicate (MSD) results provide matrix-specific information on the precision of the method for specific target compound classes. Precision is expressed by the relative percent difference (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample. Samples results must be within RPD limits of +/-30%. If RPD values are out of specification and the sample concentration is less than five times the spike concentration, all associated detected sample results are qualified as estimates and flagged "J". If RPD values are out of specification and the sample concentration is greater than five times the spike concentration, no qualification is required.

All precision results were acceptable.

Field Duplicate Samples

No field duplicates were submitted for analysis.

Analytical Detection Levels

Reported analytical detection levels are compared against the required quantitation limits (RQL's) to ensure that laboratory detection levels meet the required criteria.

Eight analytes were reported above the RQL. Under the BHI statement of work, no qualification is required. All other analytes met the RQL.

· Completeness

Data package No. H3206-LLI was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

Due to method blank contamination, all methylene chloride results were qualified as undetected, raised to the RQL and flagged "U".

Eight were reported above the RQL. Under the BHI statement of work, no qualification is required.

REFERENCES

BHI, MRB-SBB-A23665, *Validation Statement of Work*, Bechtel Hanford Incorporated, September 5, 1997.

DOE/RL-96-22, Rev. 4, 100 Area Remedial Action Sampling and Analysis Plan, U.S. Department of Energy, February 2005.

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with the BHI validation SOW are as follows:

- Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the same quantitation limit corrected for sample dilution and moisture content by the laboratory.
- UJ Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.
- Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.
- Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.
- UR Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.
- NJ Indicates presumptive evidence of a compound at an estimated value.

 The data may not be valid for some specific applications (i.e., usable for decision-making purposes).
- Indicates presumptive evidence of a compound. The data may not be valid for some specific applications usable for decision-making purposes).

Appendix 2 Summary of Data Qualification

VOLATILE DATA QUALIFICATION SUMMARY*

SDG: H3206	REVIEWER:	Project: 600-270 - Hills	PAGE 1. OF 1
COMMENTS: COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Methylene chloride	U at RQL	All	Method blank contamination

^{* -} The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Qualified Data Summary and Annotated Laboratory Reports

Project: BECHTEL-HANFO	ORD			1	
Laboratory: LLI		-		1	
Case:	SDG: H	3206		1	
Sample Number		J03CJ9		J03CH3	
Remarks	_			E. Blank	
Sample Date	•	6/7/05		6/7/05	
Analysis Date		06/13/05		06/13/05	
VOA	RQL	Result	Q	Result	Q
Chloromethane	10	12	Ū	10	U
Bromomethane	10	12	U	10	U
Vinyl Chloride	10	12	U	10	U
Chloroethane	10	12	U	10	Ü
Methylene Chloride	10	10	U	10	U
Acetone	10	12	U	10	U
Carbon Disulfide	10	6	Ŭ	5	Ū
1,1-Dichloroethene	10	6	υ	5	Ū
1,1-Dichloroethane	10	6	Ū	5	Ū
1,2-Dichloroethene (total)	10	6	ü	5	Ū
Chloroform	10	6	Ü	5	Ŭ
1,2-Dichloroethane	10	6	Ū	5	Ū
2-Butanone	10	12	Ū	10	Ū
1,1,1-Trichloroethane	10	6	Ü	5	Ū
Carbon Tetrachloride	10	6	Ü	5	Ü
Bromodichloromethane	10		U	5	حار
1,2-Dichloropropane	10	6	Ū	5	υ
cis-1,3-Dichloropropene	10	6	Ü	5	Ū
Trichloroethene	10	6	U	5	J
Dibromochloromethane	10	6	υ	5	U
1,1,2-Trichloroethane	10	6	J	5	U
Веплепе	10	6	U	5	U
trans-1,3-Dichloropropene	10	6	U	5	U
Bromoform	10	6	U	5	Ū
4-Methyl-2-pentanone	10	12	U	10	Ū
2-Hexanone	10	12	Ū	10	Ū
Tetrachioroethene	10	6	Ū	5	Ŭ
1,1,2,2-Tetrachloroethane	10	- 6	Ū	5	Ū
Toluene	10	6	Ü	5	Ů
Chlorobenzene	10	6	Ū		Ü
Ethylbenzene	10	6	Ŭ		Ŭ
Styrene	10	6	Ū		Ū
Xylene	10	6	Ū		Ū
cis-1,2-Dichloroethene	10	6	Ū		υ
trans-1,2-Dichloroethene	10		Ŭ		Ŭ

Lionville Laboratory, Inc.

Volatiles by GC/MS, HSL List

Report Date: 06/17/05 07:33 Client: TNUHANFORD B05-018 H3206 Work Order: 11343606001 Page: 1a RFW Batch Number: 0506L713

	Cust ID:	J03CJ	9	J03CH	3	J03CH	3	J03CH	3	VBLKV U		VBLKVU BS	
Sample Information	RFW#: Matrix: D.F.: Units:	00' SOIL 1.: ug/l	16	01: SOIL 0.90 ug/I	52	013 M SOIL 1.0 ug/l	06	013 MSI SOIL 0.92 ug/I	26	05LVG182-1 SOIL 1.1 ug/l	00	05LVG182-1 SOIL 1.0 ug/l	00
·	Toluene-d8	104	*	105	*	97	*	96	*	97	*	95	ક
— · — — —	luorobenzene	102	*	106	*	97	¥	94	४	94	¥	98	*
	oroethane-d4	109	*	112	*	111	ક	111	ક	99	¥	102	*
		****====	==fl===	======	==fl===	=======	==fl=:				-=fl	##==##################################	==fl
Chloromethane		12	U,	10	U	11	U	9	U	10	U	10	U
Bromomethane		12	U	10	U	11	บ	9	Ŭ	10	U	10	บ
Vinyl Chloride			U	10	U	11	_	9	U	10	U	10	U
Chloroethane			Ü	10		11	-	9	ប	10	บ	10	U
Methylene Chloride		ان 8	() 0	10 8	E U	12	В	11	В	. 3	J	3	BJ
Acetone		12	U	10	Ū	11	U	9	U	10	U	10	U
Carbon Disulfide		6	Ū	5	U	6	U	5	U	5	U	5	Ū
1,1-Dichloroethene		6	U	5	U	112	¥	111	*	5	U	101	¥
1,1-Dichloroethane		6	U	5	U	6	ซ	5	U	- 5	U	5	U
1,2-Dichloroethene (to	otal)	6	ប	5	U	6	U	5	U	, 5	U	5	U
Chloroform		6	U	5	U	6	U ·	5	U	5	ប	5	U
1,2-Dichloroethane		6	ប	5	Ū	6	บ	5	U	5	Ū	5	U
2-Butanone		12	U	10	U	11	U	9	U	10	U	10	U
1,1,1-Trichloroethane		6	U	5	U	6	U	5	U	5	U	5	U
Carbon Tetrachloride		6	U	5	U	6	Ū	5	U	5	U	5	U
Bromodichloromethane_		6	U	5	U	6	U	5	บ	5	U	5	U
1,2-Dichloropropane	<u> </u>	6	U	5	U	6	Ü	5	ប	5	U	5	U
cis-1,3-Dichloroproper	ne	6	U	5	บ	6	U	5	บ	5	U	5	Ū
Trichloroethene		6	Ū	5	U	119	*	114	ક	5	U	102	*
Dibromochloromethane_		6	U	5	U .	6	U	5	U	5	U	5	U
1,1,2-Trichloroethane	-	6	U	5	U	6	ט	5	Ū	5	U	5	บ
Benzene		6	U	5	U	109	¥	105	*	5	U	98	*
Trans-1,3-Dichloroprop	pene	6	U	5	.U	6	U	5	U	5	U	5	U
Bromoform_		6	Ū	5	บ	6	U	5	U	5	Ü	5	U
4-Methyl-2-pentanone_		12	U	10	U	11	U	9	ប	10	U	10	Ū
2-Hexanone		12	U	10	ับ	11	U	9	U	10	U	10	Ū
Tetrachloroethene		6	Ū	5	U	6	U	5	U	5	U	5	Ū
1,1,2,2-Tetrachloroeth		6	U	5	U	6	U.	5	U	5	U	. 5	U
Toluene		6	U	5	U	119	*	117	¥	5	U	104	*
*= Outside of EPA CLP	QC limits.					,	1	·					

RFW Batch Number: 0506L	Cust ID:	J03CJ9	VFORD B05-018 J03CH3		6 Work (J03CH3		<u>; 11343606</u> J03СН 3	001	Page: 1 VBLKVU	Þ	VBLKVU BS	
	RFW#:	007	013		013 MS	1	013 MSD		05LVG182-	MB1	05LVG182-1	MB1
Chlorobenzene		6 U	5	Ū	117	*	114	<u>*</u>	5	U	101	
Ethylbenzene		6 U	J 5	U	6	U	5	U.	5	U	5	U
Styrene		6 U	5	U	6	U	5	U	. 5	U	5	U
Xylene (total)		6 U	5	U	6	U	5	U	5	Ū	5	Ū
cis-1,2-dichloroethene		6 บ	5	U	6	U	5	U	5	U	5	Ū
trans-1,2-dichloroethen		6 U	5	U	6	ប	5	υ	5	Ū	-	Ū

10/1/07

Laboratory Narrative and Chain-of-Custody Documentation



Case Narrative

Client: TNU-HANFORD B05-018

LVL#: 0506L713

SDG/SAF # H3206/B05-018

W.O. #: 11343-606-001-9999-00 Date Received: 06-09-2005

GC/MS VOLATILE

Two (2) soil samples were collected on 06-07-2005.

The samples and their associated QC samples were analyzed according to criteria set forth in Lionville Laboratory SOPs based on SW 846 Method 8260B for TCL volatile target compounds on 06-13-2005.

The following is a summary of the QC results accompanying these sample results and a description of any problems encountered during their analyses:

- 1. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.
- 2. Samples were analyzed within required holding time.
- 3. Non-target compounds were not detected in the samples.
- 4. All surrogate recoveries were within acceptance criteria.
- 5. All matrix spike recoveries were within acceptance criteria.
- 6. All blank spike recoveries were within acceptance criteria.
- 7. The method blank contained the common laboratory contaminant Methylene Chloride at a level less than the CRQL.
- 8. Internal standard area and retention time criteria were met.
- 9. Manual integrations are performed according to SOP QA-125 to produce quality data with the utmost integrity. All manual integrations are required to be technically valid and properly documented. Appropriate technical flags are defined in the Glossary ("Technical Flags For Manual Integration").
- 10. LvLI is NELAP accredited by the state of Pennsylvania and holds over 20 additional state accreditations. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.
- 11. "I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature."

Iain Daniels

Laboratory Manager

Lionville Laboratory Incorporated

som\group\data\voa\tnu-hanford\0506-713.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 1 4 pages.

Bechte	el Hanford Inc.		CI	HAIN OF CUST	TODY/S	AMPLI	ANAL	YSIS	REQUES	T	B05	5-018-001	Page ±	of 4
Collector Doug Bowers				ny Contact g Bowers	Telepho 531-0				Proiect Coord KESSNER, JH		Price Code		Data Ti	urnaround
Project Designation Horseshoe Landi	on fill Residual Pesticide S	Sampling - Soil		ing Location se Shoe Landfill					SAF No. B05-018		Air Quality	, · _	7 d	lay
ادو Chest No.	RC 03 10	76		.ogbook No. 173-5		COA R6027020			Method of Shi Fed Ex	oment			<u> </u>	(·
Shinned To EBERLINE SEI	RVICES (LIONVILLE		Offsite	Property No.	250	238	,		Bill of Ladine	/Air Bill	No. Se 2	5-05/2	د_	
POSSIBLE SAM	PLE HAZARDS/RE	VIARKS			ł	.	1.	ł			1	}		1
NA		•		Preservation	None	Cool 4C	Cool 4C	Cool 4	 -	Cool 40	<u>c</u>			<u> </u>
i	ng and/or Storage			Type of Container		ļ	 	<u> </u>		 		ļ	·	} -
'	- B			No. of Container(s)		<u> </u>	1	1						
Nn				Volume	250mL	250mL	250mL	500m	L 120mL	250m				
·	SAI	MPLE ANALYS	sis		Sec item (1) in Special Instructions.	VOA - #260A (TCL)	Semi-VOA - 8270A (TCL)	Chlore Herbicid EPA\$151 Dickloropi yacatic a	es - 808 j 2,4- benox	PCBs - 8	082		•	
Sample N	No. Ma	strix *	Sample Date	Sample Time										
703C18	S	OIL	6-7-0	0931					X				#19	
J03CJ9	S	OIL	6-7-05	0730	X	X	X	$\perp_{\mathcal{X}}$	· · · · ·	12			Full	s 40 Ye
						Ĺ <u> </u>								<u> </u>
CHAIN OF P			Sign/Print			SPEC	IAL INSTR	UCTIO	NS					Matrix *
Relinquished By/Remor REF2C 37 Relinquished By/Remor	Z8 6 8 0 S yed From Date CRG 16 8 yed From Date G905	7.05 /6/1 e/Time /030 e/Time	Received By/Store Received By/Store Received By/Store Received By/Store Received By/Store Received By/Store	d ln Da d ln Da d ln Da d ln Da d ln Da	te/Time OS /// te/Time Ate/Time Ate/Time Ate/Time	Chroi Zinc)		Copper, La 71 - (CV) et availab	le to om 3728					S=Soil SE=Sedimen SO-Solid SE-Sange W=Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Tissue Wi=Wipe L=Liquid V=Vegetanon N=Oilher
LABORATORY	Received By	· ·	· • 		Tit	le	· <u></u>					Di	ate/Time	
SECTION FINAL SAMPLE	Disposal Method		<u> </u>				Dison	sed By					ate/Time	
DISPOSITION	Disposal Method						نادان ا	o o ;	•				anter 1 mile	

Bechtel Hanfo	rd Inc.	C	HAIN OF CUST	FODY/S	AMPLE	EANAL	YSIS	REQUEST	<u>r]</u>	В	05-018-001	Page <u>1</u>	of 4
Collector Doug Bowers			any Contact ig Bowers	Telepho 531-0				Proiect Coordi KESSNER, JH	nator	Price Code		Data Te	urnaround
Project Designation Horseshoe Landfill Residual	Pesticide Sampling - Soil		ling Location rse Shoe Landfill					SAF No. B05-018		Air Quali	ty 🖺 🗸	7 de	<u> </u>
Ice Chest No.	3106		Logbook No. 1173-5		COA R6027020			Method of Shir Fed Ex	ment	_			′ .
Shinned To EBERLINE SERVICES (LI		Offsite	e Property No. AC	200	138	,		Bill of Lading	Air Bill l	No. ∋∂	25 05 PC	<u> </u>	
POSSIBLE SAMPLE HAZA]		1]]		_ T	[T
	•		Preservation	None	Cool 4C	Cool 400	Cool 4			و		·	1
Special Handling and/or S	Storage		Type of Container	aG	aG	≱G	#G		aG				<u> </u>
}	_		No. of Container(s)		1	1	1	1	11				<u> </u>
·			Volume	250mL	250mL	250mL	500m	L 120mL	250ml	-		_	
	SAMPLE ANALY	SIS		See item (1) in Special Instructions.	VOA - \$260A (TCL)	Semi-VOA - 8270A (TCL)	Chlore Herbició EPARISI Dichloropi yacetic a	es - 8081 (2,4- henox	PCB4 - 20	082			
Sample No.	Matrix *	Sample Date	Sample Time										
J03CH3	SOIL	6-7-09	0741	λ	×	_ \chi_	X	\ <i>X</i>	y			stocke	
J03CH4	SOIL		0752					X				#/_	
J03CH5	SOIL		0755					X				2	
J03CH6	SOIL		0759					k				3	
J03CH7	SOIL		0801					· ·				4	
CHAIN OF POSSESSIO		Sign/Print			SPEC	IAL INSTR	UCTIO	NS					Matrix *
Relinquished By/Removed From	Date/Time (\$05 1030 Date/Time CAC 680 5 1030 Date/Time	Received By/Ston S J GH GG Received By/Ston	2 3739 6-705 Da Spel 6 50 S ed in Da	te/Time	Chron Zinc);	nium, Cobalt, C Mercury - 747	Copper, Le 'I - (CV)	846) (Antimony, A ead, Manganese, Mi					S=Soil SE=Sedimen; SO=Solid SI=Studge VV = Water O=Oil A=Arr DS=Drum Solids DL=Drum Liquids T=Tissue VV=Wipe L=Liquid
Relinquished By/Removed From	Date/Time	Received By/Ston	·	te/Time	Re	rsonnel not a clinquish sam I # Con_(vailable ples froi	to m 3728					V=Vegetation X=Other
Relinquished By/Removed From	Date/Time	Received By/Store	ed In Da	te/Time		UI	Q'_0	-05					
LABORATORY Received By SECTION	,			Tit	le						D	ate/Time	
FINAL SAMPLE Disposal Mo	ethod					Dispos	sed By				Б	ate/Time	 .

Data Validation Supporting Documentation

VALIDATION LEVEL:	Α	B		D	E	
PROJECT: JO	U 600-	270	DATA PACKAG	ie: #320	² 6	
VALIDATOR:	TLT_	LAB: LC	Γ	DATE: 9/2	165	
			SDG:	43500		
		ANALYSES	PERFORMED			
SW-846 8260		SW-846 8260 (TCLP)	SW-846 8270		SW-846 82 (TCLP)	270
SAMPLES/MAT	RIX					
70	3CJ9	303CH	+3			
,		·				
	<u></u>					
	ACKAGE COMPI				Soil	
Technical verification	tion documentation	LETENESS AND			5	o N/A
	tion documentation	LETENESS AND			5	g N/A
Technical verification	tion documentation	LETENESS AND			5	g N/A
Technical verification	tion documentation	LETENESS AND			5	g N/A
Technical verificat	tion documentation	LETENESS AND o			5) N/A
Technical verificate Comments:	MENT TUNING	LETENESS AND operations of the control of the contr	ON (Levels D and	E)	Yes(N	o N/A
Technical verificate Comments: 2. INSTRU GC/MS tuning/per	tion documentation	LETENESS AND operation of the control of the contro	ON (Levels D and	E)	Yes N	
Technical verificate Comments: 2. INSTRU GC/MS tuning/per Initial calibrations	MENT TUNING	LETENESS AND o	ON (Levels D and	E)	Yes N	lo N/A
Comments: 2. INSTRU GC/MS tuning/per Initial calibrations Continuing calibra	MENT TUNING A	AND CALIBRATI	ON (Levels D and	E)	Yes N	lo N/A
2. INSTRU GC/MS tuning/per Initial calibrations Continuing calibra Standards traceab	MENT TUNING A	AND CALIBRATI	ON (Levels D and	E)	Yes NYes NYes NYes NYes N	io N/A io N/A io N/A
2. INSTRU GC/MS tuning/pel Initial calibrations Continuing calibra Standards traceable Standards expired	MENT TUNING A rformance check accaptable?	AND CALIBRATI	ON (Levels D and	E)	Yes NYes NYes NYes NYes NYes NYes N	io N/A io N/A io N/A

3. BLANKS (Levels B, C, D, and E)					,	5
Calibration blanks analyzed? (Levels D, E)						λήγ.
Calibration blank results acceptable? (Levels D, E)						
Laboratory blanks analyzed?						
Laboratory blank results acceptable?				Yes ((M)	N/A
Field/trip blanks analyzed? (Levels C, D, E)	••••••		(************************************	QQ	TO.	N/A
Field/trip blank results acceptable? (Levels C, D, E)						
Transcription/calculation errors? (Levels D, E)				Yes	No	(N/A
Comments: medylare chloricle -		_ d	Ral			
		<u> </u>				
			No	FB		
4. ACCURACY (Levels C, D, and E)						
Surrogates/system monitoring compounds analyzed?		•••••••		(Xes)	No	N/A
Surrogate/system monitoring compound recoveries acceptable?	***********		***************************************	(Ye);	No	N/A
Surrogates traceable? (Levels D, E)				Yes	NO	(N/A)
Surrogates expired? (Levels D, E)						
MS/MSD samples analyzed?				(Y)	No	N/A
MS/MSD results acceptable?		,		Ye's	No	N/A
MS/MSD standards NIST traceable? (Levels D, E)				Yes	No	NA AM
MS/MSD standards? (Levels D, E)				Yes	No	(N/A)
LCS/BSS samples analyzed?				(. Yes	No	N/A
LCS/BSS results acceptable?				(Ŷ	No	N/A
Standards traceable? (Levels D, E)			•••••	Yes	Nq	NA
Standards expired? (Levels D, E)				Yes	No	W
Transcription/calculation errors? (Levels D, E)				Yes	No	
Performance audit sample(s) analyzed?	•••••	••••••		Yes	N	N/A
Performance audit sample results acceptable?	***********			Yes	No	N/A
Comments:				CAG	<u> </u>	

5.	PRECISION (Levels C, D, and E)			
	ASD samples analyzed?		_	N/A
	MSD RPD values acceptable?			
	MSD standards NIST traceable? (Levels D, E)			
MS/M	MSD standards expired? (Levels D, E)	Yes	No	N/A)
Field	duplicate RPD values acceptable?	Yes	No	(MA)
Field	split RPD values acceptable?	Yes	No	(N/A)
Trans	scription/calculation errors? (Levels D, E)	Yes	No	(AYA
Com	ments:			
6.	SYSTEM PERFORMANCE (Levels D and E)			
	nal standards analyzed?			
	rnal standard areas acceptable?			
	nal standard retention times acceptable?			1
Stand	dards traceable?	Yes	No	N/A
	dards expired?			
Tran	nscription/calculation errors?	Yes	No	N/A
	nments:			<u> </u>
7. ~	HOLDING TIMES (all levels)	Ves) _{Nc}	N/A
	nples properly preserved?	\triangle		N/A
	nple holding times acceptable?		140	IVA
Com	nments:			

8.	COMPOUND IDENTIFICATION, QUANTITATION, AND D	ETECTION LIMITS (all	
levels)	•		\sim
	ound identification acceptable? (Levels D, E)		
	ound quantitation acceptable? (Levels D, E)		
Results	s reported for all requested analyses?		/A
Results	s supported in the raw data? (Levels D, E)	Yes No N	[/A
Sample	es properly prepared? (Levels D, E)	Yes No	/ <u>A</u>
Labora	story properly identified and coded all TIC? (Levels D, E)	Yes No (N	1/Å
	ion limits meet RDL?		
Transci	ription/calculation errors? (Levels D, E)	Yes No (N	17À
Commo	ents: & over	_	_
9.	SAMPLE CLEANUP (Levels D and E)	(\
	cleanup performed?	Yes No	ΙÅ
	check performed?	E	
	check recoveries acceptable?		
	calibration performed?		
	calibration check performed?	3	٠,
	calibration check retention times acceptable?		
	√calibration materials traceable?		
	√calibration materials Expired?	T I	
	tical batch QC given similar cleanup?		
	cription/Calculation Errors?		
Comm			
Comn	nents:		
Comm			
Comm			

Date:

5 October 2005

To:

Bechtel Hanford Inc. (technical representative)

From:

TechLaw, Inc.

Project:

Horseshoe Landfill Residual Pesticide Sampling - Soil - Waste Site

600-270

Subject: Semivolatile - Data Package No. H3206-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. H3206 prepared by Lionville Laboratory Inc. (LLI). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

	mestigavelenderia.		Veritolat indig	
J03CJ9	6/7/05	Soil	O	See note 1
J03CH3	6/7/05	Soil	С	See note 1

^{1 -} Semivolatiles by 8270C.

Data validation was conducted in accordance with the Bechtel Hanford Incorporated (BHI) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, February 2005). Appendices 1 through 5 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers

Appendix 2. Summary of Data Qualification

Appendix 3. Qualified Data Summary and Annotated Laboratory Reports

Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation

Appendix 5. Data Validation Supporting Documentation

DATA QUALITY OBJECTIVES

Holding Times

Analytical holding times were assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Samples must be extracted within 14 days of the date of sample collection and analyzed within 40 days from the date of extraction.

If holding times are exceeded, but not by greater than two times the limit, all associated sample results are qualified as estimates and flagged "J" for detects and "UJ" for non-detects. If holding times are exceeded by greater than two

times the limit, all associated detectable sample results are qualified as estimates and flagged "J" and all non-detects are rejected and flagged "UR".

All holding times were met.

Method Blanks

Method blank analyses are conducted to determine the extent of laboratory contamination introduced through sampling, sample preparation and analysis. At least one acceptable method blank analysis must be conducted for every 20 samples. No contaminants should be present in the method blank. Analytical results for analytes present in any sample at less than five times the concentration of that analyte found in the associated blank are qualified as non-detects and flagged "U". Common laboratory contaminants present in samples at less than ten times the concentration of that analyte found in the associated blank are qualified as non-detects. If a sample result is less than the CRQL and is less than five times (or less than ten times for lab contaminants) the highest associated blank result, the sample result value is raised to the CRQL level and qualified as undetected "U".

Due to method blank contamination, the bis(2-ethylhexyl)phthalate result in all samples were qualified as undetected, raised to the RQL and flagged "U".

Due to method blank contamination, the di-n-butylphthalate and diethylphthalate results in sample J03WCJ9 were raised to the RQL, qualified as undetected and flagged "U".

All other method blank results were acceptable.

Field Blanks

One equipment blank (J03CJ9) was submitted for analysis. No analytes were detected in the field blank.

· Accuracy

Matrix Spike/Matrix Spike Duplicate & Blank Spike Recoveries

Matrix spike/matrix spike duplicate analyses are used to assess the analytical accuracy of the reported data and the effect of the matrix on the ability to accurately quantify sample concentrations. Matrix spike/matrix spike duplicate analyses are performed in duplicate using five compounds for which percent recoveries must be within a range of 50-150% or within laboratory control limits.

If spike recoveries are outside control limits, detected sample results less than five times the spike concentration are qualified as estimates and flagged "J". Undetected sample results with spike recoveries below control limits are qualified as estimates and flagged "UJ". Undetected sample results are not qualified if the spike recovery is above control limits. Sample results greater than five times the spike concentration require no qualification.

Due to matrix spike duplicate (13%) and LCS (8%) recoveries outside QC limits, all 2,4-dinotrophenol results were qualified as estimates and flagged "J".

All other accuracy results were acceptable.

Surrogate Recovery

The analyses of surrogate compounds provide a measure of performance for individual samples. Matrix-specific surrogate compound recovery control windows have been established by the EPA CLP program. If two surrogates of the same class of compounds (base/neutral or acid) are out of control limits, all associated sample results greater than the contract required quantitation limit (CRQL) are qualified as estimates and flagged "J". Sample results less than the CRQL and below the lower control limit are qualified as estimates and flagged "UJ". Sample results less than the CRQL with recoveries above the upper control limit require no qualification. If a surrogate recovery is less than 10%, detects are qualified as estimates and flagged "J" and nondetects are rejected and flagged "UR".

All surrogate results were acceptable.

Precision

Matrix Spike/Matrix Spike Duplicate Samples

Matrix spike (MS)/matrix spike duplicate (MSD) results provide matrix-specific information on the precision of the method for specific target compound classes. Precision is expressed by the relative percent difference (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample. Samples results must be within RPD limits of +/-30%. If RPD values are out of specification and the sample concentration is less than five times the spike concentration, all associated detected sample results are qualified as estimates and flagged "J". If RPD values are out of specification and the sample concentration is greater than five times the spike concentration, no qualification is required.

Due to an RPD outside QC limits (104%), all 2,4-dinitrophenol results were qualified as estimates and flagged "J".

All other precision results were acceptable.

Field Duplicate Samples

No field duplicates were submitted for analysis.

Analytical Detection Levels

Reported analytical detection levels are compared against the required quantitation limits (RQL's) to ensure that laboratory detection levels meet the required criteria. Sixteen analytes exceeded the RQL. Under the BHI statement of work, no qualification is required. All other analytes met the RQL.

Completeness

Data package No. H3206-LLI was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

The following minor deficiencies were noted:

- Due to method blank contamination, the bis(2-ethylhexyl)phthalate result in all samples were qualified as undetected, raised to the RQL and flagged "U".
- Due to method blank contamination, the di-n-butylphthalate and diethylphthalate results in sample J03WCJ9 were raised to the RQL, qualified as undetected and flagged "U".
- Due to matrix spike duplicate (13%) and LCS (8%) recoveries outside QC limits, all 2,4-dinotrophenol results were qualified as estimates and flagged "J".
- Due to an RPD outside QC limits (104%), all 2,4-dinitrophenol results were qualified as estimates and flagged "J".

Data flagged "J" indicates that the associated concentration is an estimate, but under the BHI statement of work, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

Sixteen analytes exceeded the RQL. Under the BHI statement of work, no qualification is required.

REFERENCES

BHI, MRB-SBB-A23665, Validation Statement of Work, Bechtel Hanford Incorporated, September 5, 1997.

DOE/RL-96-22, Rev. 4, 100 Area Remedial Action Sampling and Analysis Plan, U.S. Department of Energy, February 2005.

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with the BHI validation SOW are as follows:

- Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the same quantitation limit corrected for sample dilution and moisture content by the laboratory.
- UJ Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.
- J Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.
- R Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.
- UR Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.
- NJ Indicates presumptive evidence of a compound at an estimated value.

 The data may not be valid for some specific applications (i.e., usable for decision-making purposes).
- Indicates presumptive evidence of a compound. The data may not be valid for some specific applications usable for decision-making purposes).

Appendix 2
Summary of Data Qualification

SEMIVOLATILE DATA QUALIFICATION SUMMARY*

SDG: H3206		Projective 6000-27/02	PAGE IN DE TO
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Di-n-butylphthalate Diethylphthalate	U at RQL	J03CJ9	Method blank contamination
Bis(2-ethylhexyl)phthalate	U at RQL	All	Method blank contamination
2,4-Dinitrophenol	J	All	MSD, LCS and RPD

^{* -} The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Qualified Data Summary and Annotated Laboratory Reports

Project: BECHTEL-HANFORD Laboratory: LLI	SDG.	H3206		[
Sample Number	Jaug.	J03CJ9		J03CH3				τ	
Remarks	E. Blank		3030113		 -		 	_	
Sample Date		6/7/05		6/7/05		 		 	
Sample Date Extraction Date		6/12/05		6/12/05		 		╅───	
Analysis Date		6/14/05		6/14/05		 		 	
Semivolatile (8270C)	RQL	Result	Q	Result	Q	Result	Τα	Result	TQ.
Phenol	660	330		340		1.1000.00	┨ [╤]	1	†=
bis(2-Chloroethyl)ether	660			340		 	1	 	+
2-Chlorophenol	660	 -	_	340		 	+	 	┿
1,3-Dichlorobenzene	660			340		 	+-	 	十
1.4-Dichlorobenzene	660			340		 	\top	 	†
1.2-Dichlorobenzene	660			340	<u> </u>		\top	1	+
2-Methylphenol	660			340		 	1-	1	†
2,2'-oxybis(1-chloropropane)	660			340		 	+	 	+-
3 and/or 4-Methylphenol	660			340	_	 	+-	 	+-
N-Nitroso-di-n-propylamine	660	330		340		 	┪	 	+-
Hexachloroethane	660			340	-	 	╅	1	+
Nitrobenzene	660			340	_	 	T	1	+-
Isophorone	660			340		 	1-	1	1-
2-Nitrophenol	660	-		340			+	1	+-
2,4-Dimethylphenol	660			340		1	+		╅-
bis(2-Chloroethoxy)methane	660			340		 	1		_
2,4-Dichlorophenol	660	+		340		 	╅╴		
1,2,4-Trichlorobenzene	660			340		1	1	1	\top
Naphthalene	660	<u> </u>		340	Ū		1	1 -	_
4-Chloroaniline	660	 	1	340		 	_		_
Hexachlorobutadiene	660			340		1	 	<u> </u>	_
4-Chloro-3-methylphenol	660	+		340	_	 	\top	 	7-
2-Methylnaphthalene	660	+		340		 	十	1	+
Hexachiorocyclopentadiene	660	+		340		 	\top	†	1-
2,4,6-Trichlorophenol	660	+		340	_	┼┈╌	\top	 	1
2,4,5-Trichlorophenol*	660			850	_	 	†	1	+
2-Chloronaphthalene	660		-	340	<u> </u>	 	1	1	_
2-Cholonaphthalene	660	+		850		+	1	T	_
Dimethylphthalate	660			340	- -	 	+-	 	+-
Acenaphthylene	660			340	_	+	+-	+	7
2.6-Dinitrotoluene	660			340		+	+-	 	+

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Laboratory: LLI SDG: H3206	
Remarks E. Blank Sample Date 6/7/05 6/7/05 Semple Date 6/12/05 6/12/05 Semple Date 6/12/05 6/12/05 Semple Date 6/14/05 6/14/05 Semple Date 6/14/05 6/14/05 Semple Date General Date Date Date Date Date Date Date Date	
Sample Date 6/7/05 6/7/05	_
Extraction Date 6/12/05 6/12/05 Semivolatile (8270C) RQL Result Q Result	
Analysis Date 6/14/05 6/14/05 Semivolatile (8270C) RQL Result Q Re	
Semivolatile (8270C) RQL Result Q	
3-Nitroaniline* 660 840 U 850 U 340 U 2,4-Dinitrophenol* 660 840 UJ 850 UJ 4-Nitrophenol* 660 840 UJ 850 UJ 50 UJ	
Acenaphthene 660 330 U 340 U 2,4-Dinitrophenol* 660 840 UJ 850 U 850	ilt Q
2,4-Dinitrophenof* 660 840 UJ 850 UJ 4-Nitrophenof* 660 840 U 850 U Dibenzofuran 660 330 U 340 U 2,4-Dinitrotoluene 660 330 U 340 U Diethylphthalate 660 660 U 340 U 4-Chlorophenyl-phenyl ether 660 330 U 340 U Fluorene 660 330 U 340 U 4-Nitroaniline* 660 840 U 850 U 4,6-Dinitro-2-methylphenol* 660 840 U 850 U N-Nitrosodiphenylamine 660 330 U 340 U 4-Bromophenyl-phenyl ether 660 330 U 340 U	
4-Nitrophenol* 660 840 U 850 U Dibenzofuran 660 330 U 340 U 2,4-Dinitrotoluene 660 330 U 340 U Diethylphthalate 660 660 U 340 U Diethylphthalate 660 660 U 340 U Diethylphthalate 660 330 U 340 U DIETHYLPHANA CONTROL CONT	
Dibenzofuran 660 330 U 340 U	
2,4-Dinitrotoluene 660 330 U 340 U Diethylphthalate 660 660 U 340 U 4-Chlorophenyl-phenyl ether 660 330 U 340 U Fluorene 660 330 U 340 U 4-Nitroaniline* 660 840 U 850 U 4,6-Dinitro-2-methylphenol* 660 840 U 850 U N-Nitrosodiphenylamine 660 330 U 340 U 4-Bromophenyl-phenyl ether 660 330 U 340 U	
Diethylphthalate	
4-Chlorophenyl-phenyl ether 660 330 U 340 U Fluorene 660 330 U 340 U 4-Nitroaniline* 660 840 U 850 U 4,6-Dinitro-2-methylphenol* 660 840 U 850 U N-Nitrosodiphenylamine 660 330 U 340 U 4-Bromophenyl-phenyl ether 660 330 U 340 U	
Fluorene 660 330 U 340 U	
4-Nitroaniline* 660 840 U 850 U 4,6-Dinitro-2-methylphenol* 660 840 U 850 U N-Nitrosodiphenylamine 660 330 U 340 U 4-Bromophenyl-phenyl ether 660 330 U 340 U	
4,6-Dinitro-2-methylphenol* 660 840 U 850 U N-Nitrosodiphenylamine 660 330 U 340 U 4-Bromophenyl-phenyl ether 660 330 U 340 U	
N-Nitrosodiphenylamine 660 330 U 340 U 4-Bromophenyl-phenyl ether 660 330 U 340 U	
4-Bromophenyl-phenyl ether 660 330 U 340 U	
4-Bromophenyl-phenyl ether 660 330 U 340 U	
Pentachlorophenot* 660 840 U 850 U	
Phenanthrene 660 330 U 340 U	
Anthracene 660 330 U 340 U	
Carbazole 660 330 U 340 U	
Di-n-butylphthalate 660 660 U 340 U	
Fluoranthene 660 330 U 340 U	
Pyrene 660 330 U 340 U	
Butylbenzylphthalate 660 330 U 340 U	
3,3'-Dichlorobenzidine 660 330 U 340 U	
Benzo(a)anthracene 660 330 U 340 U	
Chrysene 660 330 U 340 U	
bis(2-Ethylhexyl)phthalate 660 660 U 660 U	
Di-n-octylphthalate 660 330 U 340 U	
Benzo(b)fluoranthene 660 330 U 340 U	
Benzo(k)fluoranthene 660 330 U 340 U	
Benzo(a)pyrene 660 330 U 340 U	
Indeno(1,2,3-cd)pyrene 660 330 U 340 U	$\neg \vdash$
Dibenz(a,h)anthracene	$\neg \neg$
Benzo(g,h,l)perylene 660 330 U 340 U	

Lionville Laboratory, Inc.

Semivolatiles by GC/MS, HSL List

Report Date: 06/16/05 16:10

RFW Batch Number: 0506L713		Client: TNUHANFORD B05-018 H3206						Order: 1	<u>1343</u>			Page: 1a	
Cust ID: Sample RFW#:		J03CJ9 007		J03CH3 013		J03CH3 013 MS		J03CH3 013 MSD		SBLKLB 05LE0489-MB1		SBLKLB BS 05LE0489-MB1	
					the state of the s		00	1.00		1.00			
	Units:	ug/	Kg	ug/l	(g	ug/Kg		ug/Kg		ug/Kg		ug/Kg	
·	Nitrobenzene-d5	61	*	50	*	81	*	81	*	62	*	86	- -
Surrogate	2-Fluorobiphenyl	63	¥	50	Ł	88	ક	86	ક્ષ	70	ક્ષ	88	욯
Recovery	Terphenyl-d14	7 7	*	64	ક્ર	96	ક્ષ	94	ક	77	४	96	8
	Phenol-d5	71	¥	55	8	90	*	81	ક	72	*	89	*
	2-Fluorophenol	58	¥	45	¥	75	¥	72	*	59	ક	81	ક્ર
	2,4,6-Tribromophenol	71	8	49	*	119	*	118	*	78	*	106	*
Phenol		330	==fl== U	340	==fl== U	.======== 88	*=±1≖ %	======================================	==f1 %	330	=tl ט	======== 86	==fl %
bis (2-Chlore	pethyl)ether	330	Ū	340	U	86	*	78	ł	330	Ū	83	*
2-Chlorophen	ol	330	ប	340	U	82	*	70	*	330	Ū	81	*
1,3-Dichloro	obenzene	330	U	340	บ	74	*	73	*	330	U	77	*
1,4-Dichloro	obenzene	330	Ū	340	U	72	*	74	¥	330	U	79	è.
1,2-Dichlorobenzene		330	U	340	U	79	¥	80	ક	330	U	81	*
2-Methylphen	nol	330	U	340	บ	85	ક્ર	85	*	330	U	85	ક
2,2'-oxybis((1-Chloropropane)	330	บ	340	ប	84	૪	77	*	330	U	78	¥
4-Methylphen	nol	330	U	340	บ	84	*	82	¥	330	U	78	*
N-Nitroso-di	l-n-propylamine	330	U	340	U	81	*	82	옿	330	U	80	*
Hexachloroet	hane	330	U	340	U	72	*	76	*	330	υ	77	*
Nitrobenzene	<u> </u>	330	Ū	340	U	79	*	75	ક	330	U	80	*
Isophorone		330	บ	340	บ	76	*	80	*	330	U	78	*
2-Nitropheno	01	330	Ū	340	Ü	77	8	78	¥	330	U	78	ક
2,4-Dimethyl	phenol	330	U	340	U	68	*	80	¥	330	U	72	*
bis(2-Chloro	pethoxy)methane	330	U	340	บ	81	¥	82	ક	330	U	82	*
2,4-Dichloro	phenol	330	U	340	U	78	*	78	*	330	Ū	78	왐
1,2,4-Trichl	orobenzene	330	U	340	U	78	*	76	¥	330	U	79	ક્ષ
Naphthalene_		330	U	340	U	. 72	*	72	*	330	U	73	*
4-Chloroanil	ine	330	Ū	340	U	89	*	88	*	330	IJ	87	*
Hexachlorobu	itadiene	330	ប	340	U	86	*	89	*	330	U	90	*
4-Chloro-3-m	methylphenol	330	Ü	340	U	83	*	86	ક્ર	330	U	80	*
2-Methylnaph	thalene	330	U	340	U	83	*	84	ક	330	U	84	*
Hexachlorocy	clopentadiene	330	U	340	U	73	*	72	*	330	Ū	69	*
2,4,6-Trichl	orophenol	330	U	340	Ū	72	*	73	*	330	Ū	70	*
2,4,5-Trichl		840	Ü	850	U ,	89	*	/ 84	*	830	U	80	*
*= Outside o	*= Outside of EPA CLP QC limits.							1.109		•			

p 10/1/09

	Cust ID:	J03CJ9		J03CH3		J03CH3		J03CI	13	SBLKLB		SBLKLB B	S
	RFW#:	007		013		013 MS		013 MS	SD	05LE0489-N	B 1	05LE0489	-ME
-Chloronaphthalene		330 t	Ŭ	340	U	82	*	81	₹.	330	U	80	
-Nitroaniline		840 (ט	850	U	84	*	87	*	830	U	. 80	
imethylphthalate		330 t	ט	340	Ü	87	*	87	ક	330	U	79	
cenaphthylene _		330 t	U	340	ប	82	*	82	*	330	U	78	
,6-Dinitrotoluene		330 t	U	340	Ü	91	ક	92	¥	330	U	81	
-Nitroaniline		840 t	U .	850	บ	95	ક્ષ	96	ક	830	U	89	
cenaphthene		330 t	U .	340	υ	84	8	84	¥	. 330	U	79	
,4-Dinitrophenol		840 1	u T	850	v T	41	ક	.13	* %	830	Ū	8	*
-Nitrophenol		840 t	U	850	U	61	*	61	*	830	U	57	
ibenzofuran		330 (U	340	ט	85	¥	88	*	330	Ū	82	
,4-Dinitrotoluene		330 t	U	340	U	88	뫔	88	*	330	Ū	. 80	
iethylphthalate		610 46 min		340		90	8	91	*	30	J	79	
-Chlorophenyl-phenylethe	<u> </u>	330 1	U	340	U	86	*	89	8	330	Ū	83	
			U U	340		85	ક	85	*	330	Ü	78	
uorene Nitroaniline			U	850	U ·		*	79	8	830	Ü	79	
6-Dinitro-2-methylpheno		840 T	Ū	850	บ	90	*	77	*	830	Ū	58	
Nitrosodiphenylamine (1))	· 330 t	U	340	U	75	ક્ર	79	*	330		71	
Bromophenyl-phenylether			Ü	340		90	*	94	*	330	Ū	85	
exachlorobenzene		330 (U	340	U	108	*	108	*	330	บ	95	
entachlorophenol		840 T	U .	850	U	102	*	107	*	830	Ū	88	
enanthrene			_ U	340	Ü	87	8	90	*	330	Ū	81	
thracene		330 t	_	340	Ū	87	*	91	8	330	Ū	80	
rbazole		330 t		340	Ü	100	8	100	*	330	Ū	88	
-n-butylphthalate		660 85/0/20		340	Ū	95	*	97	8	19	J	86	
uoranthene		330 t		340	Ū	95	¥	99	ક	330	Ū	86	
rene			IJ	340	U	79	8	79	*	330	U	78	
tylbenzylphthalate		330 T	- U	340	U	85	*	85	ક	330	Ū	83	
3'-Dichlorobenzidine		330 t	י ט	340	Ū	101	8	100	*	330	U	97	
nzo(a)anthracene		330 t	J	340	U	75	ę.	73	¥	330	υ	71	
		330 T		340	Ū	77	*	76	*	330	Ū	74	
rysene s(2-Ethylhexyl)phthalate	<u> </u>	6 60198 MAIN		10 75,0		81	*	78	*	38	J	80	
-n-octyl phthalate		330 U		340	U	80	ę.	80	8		Ū	81	
nzo(b)fluoranthene		330 t		340		102	ř	102	*	330		103	
nzo(k)fluoranthene		330 t		340		76	*	72	*	330		73	
		330 C		340		92	*	88	*	330		86	
deno(1,2,3-cd)pyrene		330 t		340		105	ક	102	*	330		94	
benz(a,h)anthracene		330 T	-	340		104	*	101	*	330		93	
nzo(g,h,i)perylene		330 T		340		111	* .	104	*	330		89	
) - Cannot be separated						CLP QC			٠	550	-	Ų J	

M tollos

Laboratory Narrative and Chain-of-Custody Documentation



Case Narrative

Client: TNU-HANFORD B05-018

LVL #: 0506L713

SDG/SAF # H3206/B05-018

W.O. #: 11343-606-001-9999-00 Date Received: 06-09-2005

SEMIVOLATILE

Two (2) soil samples were collected on 06-07-2005.

The samples and their associated QC samples were extracted according to Lionville Laboratory SOPs based on SW 846 method 3540C on 06-12-2005 and analyzed according to criteria set forth in Lionville Laboratory SOPs based on SW 846 Method 8270C for TCL Semivolatile target compounds on 06-14-2005.

The following is a summary of the QC results accompanying the sample results and a description of any problems encountered during their analyses:

- 1. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.
- 2. Samples were extracted and analyzed within required holding time.
- Non-target compounds were detected in these samples. 3.
- All surrogate recoveries were within acceptance criteria. 4.
- 5. One (1) of one hundred twenty-eight (128) matrix spike recoveries was outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
- One (1) of sixty-four (64) blank spike recoveries was outside acceptance criteria. A copy of the 6. Sample Discrepancy Report (SDR) has been enclosed.
- The method blank contained the common laboratory contaminants Diethylphthalate, Bis (2-Ethylhexy) 7. phthalate and Di-n-butylphthalate at levels less than the CRQL.
- Internal standard area and retention time criteria were met. 8.
- Manual integrations are performed according to SOP QA-125 to produce quality data with the utmost 9. integrity. All manual integrations are required to be technically valid and properly documented. Appropriate technical flags are defined in the Glossary ("Technical Flags For Manual Integration").
- 10. LvLI is NELAP accredited by the state of Pennsylvania and holds over 20 additional state For a complete listing of accrediting authorities and the corresponding accreditations. analytes/methods, please contact your Project Manager.
- 11. I certify, that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data, contained in this hard-copy data package, has been authorized, by the Laboratory Manager or a designee, as verified by the following signature.

Laboratory Manager

Lionville Laboratory Incorporated

som\gorup\data\bna\tmu-hanford\0506-713.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 1 8 pages.

0/28/05 Date

Lionville Laboratory Sample Discrepancy Report (SDR)	SDR #: <u>05/15</u> 200
Initiator: JM DALEY Batch: 050617/3 Para Date: 15 June 2005 Samples: M5 & Solves Matricella Client: 7MU Hanfule 1805-018 Method: SW846/MCAWW/CLPI Prep	meter: SV
1, Reason for SDR	
a. COC Discrepancy Tech Profile Error Client Request Sampler Er Transcription Error Wrong Test Code Other b. General Discrepancy Missing Sample/Extract Container Broken Wrong Sample Pull Hold Time Exceeded Insufficient Sample Preservation Wrong	ed Label ID's Illegible
Improper Bottle Type Not Amenable to Analysis Note : Verified by [Log-In] or [Prep Group] (circle)signature/date:	
c. Problem (Include all relevant specific results; attach data if necessary)	_
New LCS Spiking Procedure Several Spike Rev Other low SPD WE 16 June 2003	
2. Known or Probable Causes(s)	
	Ĭ
3. Discussion and Proposed Action Re-log Entire Batch Following Samples: Re-leach Re-extract Re-digest Revise EDD Change Test Code to Place On/Take Off Hold (circle) Other Description: VARAPE	
4. Project Manager Instructionssignature/date: Concur with Proposed Action Disagree with Proposed Action; See Instruction Include in Case Narrative Client Contacted: Date/Person Add Cancel	
5. Final Actionsignature/date:	ition and filing.
Route Distribution of Completed SDR Route Distribution of Co	mpleted SDR
X Initiator Metals: Beegle	
X Lab General Manager: M. Taylor Inorganic: Peri	
X Project Mgr. Stone/Johnson Hasiett GC/LC: Kiger	
X Technical Mgr. Wesson/Daniels X QA (file): Alberts MS: Rychlak/k	eyman -
Data Management Feldman Admin: Soos	_
Sample Prep: Beegle/Kiger Other:Other:	

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Bechtel Hanfo	rd Inc.	CI	HAIN OF CUST	TODY/S	AMPLE	ANAL	YSIS	REQUEST		B05	5-018-001	Раце]	of 4
Collector Doug Bowers		Comp	any Contact	Telepho 531-0	ne No.			Project Coordi KESSNER, JH		Price Code		Data Tu	rnaround
Project Designation Horseshoe Landfill Residual	Pesticide Sampling - Soil	Sampl	ing Location se Shoe Landfill	SAF No. B05-018					Air Quality 7 dev				
Ice Chest No.	3106		Logbook No. 1173-5	COA Method of Shinment Fed Ex				ment					
Shinned To EBERLINE SERVICES (LI POSSIBLE SAMPLE HAZ)	ONVILLE	Offsite	Property No. AC	2501	138	1		Bill of Lading/	Air Bill N	‰. ≥€≥	5 OS P	<u> </u>	.
TOCOLDED STATE DE TITLE		2	Preservation	None	Cool 4C	Cool 400	Cool 46	Cool 4C	Cool 4C				
Special Handling and/or Storage			Type of Container	₽G	#G	∎G	∎G	aG	aG				
, special random g	,		No. of Container(s)	<u> </u>	1	'	1	1	1		1	L	
	•		Volume	250mL	250mL	250mL	500ml	L 120mL	250mL				
	Sample analy	YSIS		See item (1) in Special Instructions.	VOA - #260A (TCL)	Semi-VOA - 8270A (TCL)	Chloro Herbicide EPAB151 : Dichloroph yacetic ac	s - BOB 2,4- enox	PCBs - \$0	15.2			
Sample No.	Matrix *	Sample Date	Sample Time				St id						
J03CH3	SOIL	6-7-09	0741	χ	X	k	X	X	X			stocke,	
J03CH4	SOIL		0.752		ļ <u>.</u>			X				#1	
J03CH5	SOIL		0755		ļ			X	ļ		 	1	
J03CH6	SOIL		0759	ļ				<u> </u>		 	ļ	1_1	<u> </u>
J03CH7	SOIL	<u> </u>	0801	<u>L</u>	<u> </u>			<u> </u>	<u></u>	<u> </u>	<u> </u>	1 4	34-4-1
Relinquished By/Removed From Relinquished By/Removed From	Date/Time Date/Time CAC G 80 5 63 0 Date/Time Date/Time Date/Time	Received By/Ston 8 J GA GA Received By/Ston 0 FG D G Received By/Ston	ed in Da	ste/Time 16/9 16/7 16	(1) K Chrow Zinc}	TAL INSTR P Metals - 60 nium. Cobalt. C ; Mercury - 74 rsonnel not a clinquish sam f #	10A (SW-I Copper, Le 7I - (CV)	346} {Autimony, A ad, Manganese, M	rsenic, Bar olybdennum	ium, Beryllium, B , Nickel, Seleniun	n, Silver, Vanad	n, dinn, dinne	Matrix * S-Seil SE-Sediment SO-Solid SI-Sindge W = Water O-Oll A-Air DI-Drinn Liqui T-Tissue W1-Wipe L-Liquid V-Vegetativa X-Other
SECTION		<u></u> .	<u> </u>			Diago.	end B				r	Date/Time	
FINAL SAMPLE Disposal Me DISPOSITION	ethod					Dispo	sea oʻ					yartı i nit€	

BHI-EE-011 (03/01/2002)

Appendix 5

Data Validation Supporting Documentation

GC/MS ORGANIC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	В	$\binom{\circ}{\circ}$	D	E
PROJECT: HL	G	00-276	DATA PACKAG	E: H3206	2
VALIDATOR:	TLP	LAB: LLI		DATE: (6)	US
			SDG:	3206	
		ANALYSES I	PERFORMED		
SW-846 8260		SW-846 8260 (TCLP)	\$W-846 8270		SW-846 8270 (TCLP)
			<u></u>		
SAMPLES/MATI	RIX				
J03CH	f3 J03	CJ9			
			·	···	
				<u></u>	501/
DATA PA Technical verificati Comments:	on documentation p	present?			Yes N/A
2. INSTRUM	AFNT TUNING A	ND CALIEDATIC	ON (Levels D and	F)	
					Yes No N/A
		_			Yes No N/A
	-				Yes No N/A
					Yes No N/A
•					Yes No N/A
					Yes No N/A
Comments:					

(x,y) is the (x,y) and (x,y) is the (x,y) such that (x,y) is (x,y) and (x,y)

GC/MS ORGANIC DATA VALIDATION CHECKLIST

3. BLANKS (Levels B, C, D, and E)	
Calibration blanks analyzed? (Levels D, E)	Yes No (N/A)
Calibration blank results acceptable? (Levels D, E)	· ·
Laboratory blanks analyzed?	
Laboratory blank results acceptable?	
Field/trip blanks analyzed? (Levels C, D, E)	7 3 ()
Field/trip blank results acceptable? (Levels C, D, E)	
Transcription/calculation errors? (Levels D, E)	Yes No 🙀
Comments:	- F
distributable - U at ROL J9	ich
di-in-budy/philit - U all Rosh JE	
bis (2-estylhosyl) phoblet - U est RQL - all	
	,
4. ACCURACY (Levels C, D, and E)	
Surrogates/system monitoring compounds analyzed?	Yes No N/A
Surrogate/system monitoring compound recoveries acceptable?	
Surrogates traceable? (Levels D, E)	Yes No (N/A
Surrogates expired? (Levels D, E)	
MS/MSD samples analyzed?	
MS/MSD results acceptable?	
MS/MSD standards NIST traceable? (Levels D, E)	
MS/MSD standards? (Levels D, E)	
LCS/BSS samples analyzed?	
LCS/BSS results acceptable?	
Standards traceable? (Levels D, E)	
Standards expired? (Levels D, E)	
Transcription/calculation errors? (Levels D, E)	
Performance audit sample(s) analyzed?	
Performance audit sample results acceptable?	Yes No 14/73
Comments: MSD - 2,4-din prophen - 1390 Jal	NO P45
Les - 11 110 870 - Jal	<u> </u>

GC/MS ORGANIC DATA VALIDATION CHECKLIST

5. PRECISION (Levels C, D, and E)	
MS/MSD samples analyzed?	
MS/MSD RPD values acceptable?	Yes No N/A
MS/MSD standards NIST traceable? (Levels D, E)	Yes No (V/A)
MS/MSD standards expired? (Levels D, E)	Yes No (A)
Field duplicate RPD values acceptable?	Yes No 🕼
Field split RPD values acceptable?	Yes No (N/A)
Transcription/calculation errors? (Levels D, E)	Yes No AVA
Comments: 7,4. dinitrophy - 10420 - Jall	
6. SYSTEM PERFORMANCE (Levels D and E)	\sim
Internal standards analyzed?	Yes No N/A
linternal standard areas acceptable?	Yes No N/A
Internal standard retention times acceptable?	Yes No N/A
Standards traceable?	Yes No N/A
Standards expired?	Yes No N/A
Transcription/calculation errors?	
Comments:	
7. HOLDING TIMES (all levels)	\bigcap
Samples properly preserved?	V 1
Sample holding times acceptable?	Yes No N/A
Comments:	

GC/MS ORGANIC DATA VALIDATION CHECKLIST

8.	COMPOUND IDENTIFICATION, QUANTITATION, AND DETECTION	ON LIMITS (all		
levels)			,	~
Compo	und identification acceptable? (Levels D, E)	Yes	No (MA
Compo	und quantitation acceptable? (Levels D, E)	Yes	No	N)A
Results	reported for all requested analyses?		No	N/A
	supported in the raw data? (Levels D, E)			
Sample	s properly prepared? (Levels D, E)	Yes	No	囫
Labora	tory properly identified and coded all TIC? (Levels D, E)	Yes	No	(N/A)
Detecti	on limits meet RDL?	Yes	(No)	N/A
	ription/calculation errors? (Levels D, E)		No	(
9.	SAMPLE CLEANUP (Levels D and E)	V.	NT-	K)
	leanup performed?			
	heck performed?			
	heck recoveries acceptable?			
	alibration performed?			
	alibration check performed?			
	alibration check retention times acceptable?/calibration materials traceable?			1 1
	/calibration materials traceable?/calibration materials Expired?			()
	ical batch QC given similar cleanup?			
-				
	ription/Calculation Errors?	103	140	V
Comm	ents:			

Date:

5 October 2005

To:

Bechtel Hanford Inc. (technical representative)

From:

TechLaw, Inc.

Project:

Horseshoe Landfill Residual Pesticide Sampling - Soil - Waste Site

600-270

Subject: Inorganics - Data Package No. H3206-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. H3206 prepared by Lionville Laboratory Inc. (LLI). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Samijule (D)	Sample, Dairel		Vandarion.	Te to Batter who to
J03CJ9	6/7/05	Soil	С	See note 1
J03CH3	6/7/05	Soil	С	See note 1

^{1 -} ICP metals (6010B) and mercury (7471A).

Data validation was conducted in accordance with the Bechtel Hanford Incorporated (BHI) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, February 2005). Appendices 1 through 6 provide the following information as indicated below:

- Appendix 1. Glossary of Data Reporting Qualifiers
- Appendix 2. Summary of Data Qualification
- Appendix 3. Qualified Data Summary and Annotated Laboratory Reports
- Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
- Appendix 5. Data Validation Supporting Documentation
- Appendix 6. Additional Documentation Requested by Client

DATA QUALITY PARAMETERS

Holding Times

Analytical holding times for metals are assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Soil samples must be analyzed within 28 days for mercury and 6 months for ICP metals.

All holding times were acceptable.

· Preparation (Method) Blanks

Preparation Blanks

At least one preparation blank, consisting of deionized distilled water processed through each sample preparation and analysis procedure, must be prepared and analyzed with every sample delivery group. In the case of positive blank results, samples with digestate concentrations less than five times the preparation blank value have had their associated values qualified as non-detected and flagged "U". Samples with concentrations of greater than five times the highest blank concentration do not require qualification.

In the case of negative blank results, if the absolute value exceeds the contract required detection limit (CRDL), all nondetects are rejected and flagged "UR" and all detects that are less than ten times the absolute value of the associated preparation blank result are qualified as estimates and flagged "J". If the absolute value of the negative preparation blank is greater than the instrument detection limit (IDL) and less than or equal to the CRDL, all nondetects are qualified as estimates and flagged "UJ" and all detects less than ten times the absolute value of the blank are qualified as estimates and flagged "J". If the sample results are greater than ten times the absolute value of the preparation blank, no qualification is necessary.

All preparation blank results were acceptable.

Field (Equipment) Blank

One equipment blank (JO3CJ9) was submitted for analysis. Boron, barium, beryllium, cobalt, chromium, copper, manganese, vanadium and zinc were detected in the field blank. Under the BHI statement of work, no qualification is required.

· Accuracy

Matrix Spike and Laboratory Control Sample

Matrix spike (MS) and laboratory control sample (LCS) analyses are used to assess the analytical accuracy of the reported data. The matrix spike is used to assess the effect of the matrix on the ability to accurately quantify sample concentrations. Recoveries must fall within the range of 70% to 130%. Samples with a recovery of less than 30% and a sample result below the IDL are rejected and flagged "UR". Samples with a recovery of 30% to 69% and a sample result less than the IDL are qualified "UJ". Samples with a recovery of greater than 130% or less than 70% and a sample result greater than the IDL are qualified as estimates and flagged "J". Finally, for samples with a recovery greater than 130% and a sample result less than the IDL, no qualification is required.

Due to a matrix spike recovery outside QC limits (49%), all antimony results were qualified as estimates and flagged "J".

All other accuracy results were acceptable.

Precision

Laboratory Duplicate Samples

Analytical precision is expressed by the relative percent differences (RPD) between the recoveries of matrix spike duplicate (MSD) analyses performed on a sample in the analytical batch. Precision may alternatively be assessed using unspiked duplicate analyses performed on a sample in the analytical batch. If both sample and replicate activities (concentrations) are greater than five times the CRDL and the RPD is less than 30%, no qualification is required. If either activity (concentration) is less than five times the CRDL, the RPD control limit is less than or equal to two times the CRDL. If the RPD is outside the applicable control limit, associated results are qualified as estimated detects or estimated non-detects.

All laboratory duplicate results were acceptable.

Field Duplicate

No field duplicates were submitted for analysis.

Analytical Detection Levels

Reported analytical detection levels are compared against the remaining waste sites RQLs to ensure that laboratory detection levels meet the required criteria. The silver, antimony and selenium results in sample J03CH3 exceeded the RQL. Under the BHI statement of work, no qualification is required. All other analytes met the RQL.

Completeness

Data package No. H3206 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

Due to a matrix spike recovery outside QC limits (49%), all antimony results were qualified as estimates and flagged "J". Data flagged "J" indicates that the associated concentration is an estimate, but under the BHI statement of work, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

The silver, antimony and selenium results in sample J03CH3 exceeded the RQL. Under the BHI statement of work, no qualification is required.

REFERENCES

BHI, MRB-SBB-A23665, Validation Statement of Work, Bechtel Hanford Incorporated, September 5, 1997.

DOE/RL-96-22, Rev. 4, 100 Area Remedial Action Sampling and Analysis Plan, U.S. Department of Energy, February 2005.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with BHI validation SOW are as follows:

- Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.
- Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.
- J Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated concentration is an estimate, but the data are usable for decision-making purposes.
- BJ Applied to inorganic analyses only. Indicates the analyte concentration was greater than the IDL but less than the CRDL and is considered an estimated value.
- Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.
- UR Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.
- NJ Indicates presumptive evidence of a compound at an estimated value.

 The data may not be valid for some specific applications (i.e., usable for decision-making purposes).
- Indicates presumptive evidence of a compound. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

Appendix 2
Summary of Data Qualification

METALS DATA QUALIFICATION SUMMARY*

Antimony		All	MS recovery
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
COMMENTS:			T .
SDG: H3206 REVIEWER: Project: 600-270 PAGE COELL: TUI COMMENTS: COMPOUND OLIAUFIER SAMPLES AFFECTED REASON			

^{* -} The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

	Project: BECHTEL-HANFORD								
Laboratory: LLI	SDG: I	H3206			_				
Sample Number				J03CH3					
Remarks		E. Blank							
Sample Date		6/7/05		6/7/05					
Inorganics	RQL	Result	Q	Result	Q	Result	Q	Result	Q
Silver	0.2	0.07	U	0.43	U				
Arsenic	10	0.35	U	2.7					Т
Boron		0.49		2.4			Γ		
Barium	2	0.99		90.1	Г		Γ		
Beryilium	T	0.02	П	0.38	Г		Γ		Т
Cadmium	0.2	0.02	U	0.14	U				Т
Cobalt		0.09	Г	8.1					T
Chromium	1	0.13	П	9.0	Г				Т
Copper		0.13	Г	12.7	Г		Γ		T
Mercury	0.2	0.01	Ū	0.02	Ū				
Manganese		2.3		391					
Molybdenum		0.12	U	0.76	U		Γ		Τ
Nickel		0.17	U	11.4	Π		Π		Т
Lead	5	0.19	U	4.7					
Antimony	0.6				IJ				
Selenium	1	0.38	Ū	2.3	U				Т
Vanadium	1	0.13		51.9			L		Ι
Zinc	1	1.7		46.6			Γ-		T

INORGANICS DATA SUMMARY REPORT 06/22/05

CLIENT: TNUHANFORD B05-018 H3206 WORK ORDER: 11343-606-001-9999-00 LVL LOT #: 0506L713

		·			reporting	DILUTION
SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	LIMIT	FACTOR
	*******				医罗耳共享的现在分	******
-007	J03CJ9	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Arsenic, Total	0.35 u	MG/KG	0.35	1.0
		Boron, Total	0.49	MG/KG	0.18	1.0
		Barium, Total	0.99	MG/KG	0.02	1.0
		Beryllium, Total	0.02	MG/KG	0.008	1.0
•		Cadmium, Total	0.02 u	MG/KG	0.02	1.0
	•	Cobalt, Total	0.09	MG/KG	0.07	1.0
		Chromium, Total	0.13	MG/KG	0.05	1.0
		Copper, Total	0.13	MG/KG	0.06	1.0
	•	Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Manganese, Total	2.3	MG/KG	0.02	1.0
		Molybdenum, Total	0.12 u	MG/KG	0.12	1.0
		Nickel, Total	0.17 u	MG/KG	0.17	1.0
		Lead, Total	0.19 u	MG/KG	0.19	1.0
	. •	Antimony, Total	0.31 u	≾mg/kg	0.31	1.0
		Selenium, Total	0.38 u	MG/KG	0.38	1.0
	i e	Vanadium, Total	0.13	MG/KG	0.05	1.0
		Zinc, Total	1.7	MG/KG	0.04	1.0

Molilos

INORGANICS DATA SUMMARY REPORT 06/22/05

CLIENT: TNUHANFORD 805-018 H3206 WORK ORDER: 11343-606-001-9999+00 LVL LOT #: 0506L713

					REPORTING	DILUTION
SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	LIMIT	PACTOR
******			******	****	****	******
-013	J03CH3	Silver, Total	0.43 u	MG/KG	0.43	6.0
		Arsenic, Total	2.7	MG/KG	2.1	6.0
		Boron, Total	2.4	MG/KG	1.1	€.0
		Barium, Total	90.1	MG/KG	0.09	6.0
		Beryllium, Total	0.38	MG/KG	0.05	6.0
		Cadmium, Total	0,14 u	MG/KG	0.14	6.0
		Cobalt, Total	8.1	MG/KG	0.43	6.0
		Chromium, Total	9.0	MG/KG	0.33	6.0
		Copper, Total	12.7	MG/KG	0.38	6.0
		Mercury, Total	0,02 u	MG/KG	0.02	1.0
		Manganese, Total	391	MG/KG	0.09	6.0
		Molybdenum, Total	0.76 u	MG/KG	0.76	6.0
		Nickel, Total	11.4	MG/KG	1.0	6.0
		Lead, Total	4.7	MG/KG	1.2	6.0
		Antimony, Total	1.9 u′	¶ mg/kg	1.9	€.0
	•	Selenium, Total	2.3 u	MG/KG	2.3	6.0
		Vanadium, Total	51.9	MG/KG	0.28	6.0
		Zinc, Total	46.6	MG/KG	0.24	6.0

10/1/05

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation



Analytical Report

Client: TNU-HANFORD B05-018

LVL#: 0506L713

SDG/SAF#: H3206/B05-018

W.O.#: 11343-606-001-9999-00

Date Received: 06-09-05

METALS CASE NARRATIVE

1. This narrative covers the analyses of 2 soil samples.

- The samples were prepared and analyzed in accordance with methods checked on the attached glossary. Sample J03CH3 was analyzed with a 6-fold dilution for ICP metals due to sample matrix.
- 3. All analyses were performed within the required holding times.
- 4. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.
- 5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits (80-120% for Mercury).
- 6. All Initial and Continuing Calibration Blanks (ICB/CCBs) were within control limits (less than the PQL).
- 7. All preparation/method blanks (MB) were within method criteria {less than the Practical Quantitation Limit (3X the IDL), or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.
- 8 All ICP Interference Check Standards were within control limits.
- 9. All laboratory control samples (LCS) were within the 80-120% control limits. Refer to the Inorganics Laboratory Control Standards Report.
- 10. The matrix spike (MS) recoveries for 2 analytes were outside the 75-125% control limits. Refer to the Inorganics Accuracy Report.
- 11. For analytes where the ICP MS is out-of-control, a post-digestion MS (PDS) and serial dilution are performed. A PDS was prepared at meaningful concentration level for the following analytes:

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 00014

		<u>PDS</u>	<u>PDS</u>
Sample ID	Element	Concentration (ppb)	% Recovery
J03CH3	Manganese	6000	101.9
	Antimony	600	103.4

- 12. The duplicate analyses for 2 analytes were outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.
- 13. For the purposes of this report, the data has been reported to the Instrument Detection Limit (IDL). Values between the IDL and the Practical Quantitation Limit (PQL) are acquired in a region of less-certain quantification.
- 14. LvLI is NELAP accredited by the state of Pennsylvania and holds over 20 additional state accreditations. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.
- 15. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

Iain Daniels

Laboratory Manager

Lionville Laboratory Incorporated

ijw/m06-713

7/8/0x



Bechtel Hanfo	ord Inc.		CH	IAIN OF CUST	ODY/S	AMPLI	EANAL	YSIS	REC	QUEST		B0:	5-018-001	Page 4	બા. ને
Collector Doug Bowers			Comma	ny Contact 3 Bowers	Telenhor 531-0	ne No.			Project Coordinator KESSNER, JH			Price Code Data		Data Tu	runround
Project Designation Horseshoe Landfill Residual	Pesticide Sampling - So			ng Location e Shoe Landfill		·	SAF No. .B05-018				Air Quality	y 	7 d	ey	
Ice Chest No.	3 106			ogbook No. 173-5		COA R6027020	COA R602702000 Reflection of Shipment Fed Ex				ment		<u> </u>		
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NA				Preservation	None	Cool,45	Cool 4C	Cool 4		Cool 45	Cool 40	c		·	
Special Handling and/or	Storage		1	Type of Container		aG		₽G		≱G					
Nn-	_		-	No. of Container(s)	250mL	250mL	250mL,	500m	ı.	120mL	250ml	L .			- 4
•	· SAMPLE ANAL	YSIS		Volume	See item (1) in Special Instructions.	VDA - \$260A (TCL)	Semi-VOA - 8270A (TCL)	Chlore Herbicid EPA\$151 Dichloropi yscetic s	es - 2,4- henox	Pesticules - 806 t	PCBs - 10	082			7. 7. 7.
Sample No.	Matrix *	Sample	Date	Sample Time			STATE OF	10	**		生物)。	1 0 To 1		1	4.4
J03CJ8	SOIL	6-7	7.05	0931						X				#17	
J03CJ9	SOIL	6-7	-05	0730	<u> </u>	K	K	_}		<u>x</u>	2	_ 	ļ. —	Fulls	u.Ye
													1	<u> </u>	
		·							1		· <u> </u>	<u> </u>			
CHAIN OF POSSESSIO			/Prist l			SPEC	IAL INSTR	UCTIO	NS						Matrix *
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LABORATORY Received By	<u>. </u>				Till	<u> </u>				· <u>.</u>		·	De	ite/Time	
SECTION								· -		<u>. </u>					
FINAL SAMPLE Disposal Me DISPOSITION	ethod	-					Dispos	sed By					D	ate/Time	

												12	
Bechtel Hanf	ord Inc.		CHAIN OF CUST			EANAL				B05	-018-001	Page I	
Collector Doug Bowers			DRIIV Contact oug Bowers	Telenho 531-0				Project Coordi KESSNER. JH	nator	Price Code		Data Ti	rnaround
Project Designation Horseshoe Landfill Residua	of Pesticide Sampling - S		nling Location orse Shoe Landfill			· ·	- 1	SAF No. B05-018	/	Air Quality	<u>, , , , , , , , , , , , , , , , , , , </u>	7 de	y
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POSSIDE SAME EL MAE	ANDOMEMARINO		Preservation	None	Cool 4C	Cool 40P	Cool 4C	Cool 4CD	Cool 4C	2			
 Special Handling and/or	Storage		Type of Container	#G	яG	aG	#G	∎G	aG				
Special Flamening			No. of Container(s)	1	1	1	1	1	1	<u> </u>			ļ
		. <u></u>	Volume	250mL	250mL	250mL	500mL		250mL				
	- SANIPLE ANA	LYSIS		See item (1) in Special Instructions.	VOA - 8260A (TCL)	Semi-VOA - 8270A (TCL)	Chloro- Herbicides EPA\$151 (2 Dichlorophe yacetic sci	- 8061 2,4- max	PCB ₁ - 808	2			
Sample No.	Matrix *	Sample Date	Sample Time									etak > e	
J03CH3	SOIL	6-7-0	5 0741	χ	X	k	k	X	H			stocke,	
J03CH4	SOIL		0.752					X				#1	
J03CH5	SOIL		0755					X				1	
J03CH6	SOIL		6759		<u> </u>			k				1	
J03CH7	SOIL		0801					Y				4_	
CHAIN OF POSSESSI			nt Names		SPEC	IAL INSTR	UCTION	'S					Matrix *
Refinquished By/Removed From Aury Downson By/Removed From REF-2 3728 Relinquished By/Removed From Refinquished By/Removed From	Date/Time Date/Time Date/Time Date/Time	Received By/Sk	(1719 6.70) pred in Dx April 680	te/Time 1/// te/Time te/Time	Chron Zine}		opper, Lea	66) (Antimony, Ar d, Manganese, Mc					S=Soll SE=Sediment SO=Solid SI=Stradge W = Water O=Oli A=Air
SIGALES 100 CL Relinguished By/Repared From		Received of price	X pred in 16 405 Day	(c/Time	Per	rsonnel not a							DS=Drom Solid DL=Drom Liqu T=Tissic WisWipe I,=Liquel V=Vegetition
Relinquished By/Removed From	Date/Time	Received By/Sto		le/Time	Rei	rsonnel not a elinquish sam f # 2 Con C	ples from	3728 O C					X=Other
Relinquished By/Removed From 1 ABORATORY Received B	·		, to the	Titl				-			na Cla	le/Time	<u></u>
SECTION Received B	;					. <u> </u>							<u> </u>
FINAL SAMPLE Disposal M DISPOSITION	ethod		,			Dispos	ed By				Da	ite/Time	

BHI-EE-011 (03/01/2002)

Appendix 5

Data Validation Supporting Documentation

<u>V</u> ALIDATION LEVEL:	A	В	(c)	D	E
PROJECT: HS	lf co	0-270	DATA PACKAG	E: <u> </u>	06
VALIDATOR:	TU	LAB: / [7	DATE: /0//	105
			SDG:	+3206	
		ANALYSES I	PERFORMED		
SW-846/10P	SW-846/GFAA	W-846/Hg	SW-846 Cyanide		
		_	{	1	
SAMPLES/MAT	RIX				
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100					
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·	ACKAGE COMPI				S & \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \
Technical verificat	ion documentation	present?		.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	<i>→</i>
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Technical verificat	ion documentation	present?		.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	<i>→</i>
Technical verificat Comments: 2. INSTRU	ion documentation p	nance and cal	LIBRATIONS (Le	vels D and E)	Yes N N/A
Technical verificat Comments: INSTRU Initial calibrations	ion documentation performed on all in	IANCE AND CAL	LIBRATIONS (Le	vels D and E)	
Technical verificat Comments: 2. INSTRU Initial calibrations Initial calibrations	MENT PERFORM performed on all in	IANCE AND CAL	LIBRATIONS (Le	vels D and E)	
Technical verificat Comments: INSTRU Initial calibrations ICP interference cl	MENT PERFORM performed on all in acceptable?	IANCE AND CAL	LIBRATIONS (Le	vels D and E)	
Comments: INSTRU Initial calibrations ICP interference cl	MENT PERFORM performed on all in acceptable? hecks acceptable?	SANCE AND CAL struments?	LIBRATIONS (Le	vels D and E)	Yes No N/A
I cechnical verificate Comments: I NSTRU Initial calibrations Initial calibrations ICP interference cl	MENT PERFORM performed on all in acceptable? hecks acceptable?	IANCE AND CAL struments?	LIBRATIONS (Le	vels D and E)	Yes No N/A
Initial calibrations ICP interference clicv and CCV che Standards traceable	MENT PERFORM performed on all in acceptable? cks performed on al cks acceptable?	STANCE AND CAL struments?	LIBRATIONS (Le	vels D and E)	Yes No N/A
2. INSTRU Initial calibrations ICP interference cl ICV and CCV che ICV and CCV che Standards traceabl	MENT PERFORM performed on all in acceptable? cks performed on al cks acceptable?	SANCE AND CAL struments?	LIBRATIONS (Le	vels D and E)	Yes No N/A Yes No N/A
2. INSTRU Initial calibrations Interference cl ICV and CCV che ICV and CCV che Standards traceabl Standards expired Calculation check	MENT PERFORM performed on all in acceptable? cks performed on al cks acceptable?	IANCE AND CAL struments?	LIBRATIONS (Le	vels D and E)	Yes No N/A

3. BLANKS (Levels B, C, D, and E)	
ICB and CCB checks performed for all applicable analyses? (Levels D, E)	Yes No NA
ICB and CCB results acceptable? (Levels D, E)	
Laboratory blanks analyzed?	Mo N/A
Laboratory blank results acceptable?	Yes No N/A
Field blanks analyzed? (Levels C, D, E)	Yes NO N/A
Field blank results acceptable? (Levels C, D, E)	Yes No N
Transcription/calculation errors? (Levels D, E)	Yes No NA
Comments:	no FB
	<u> </u>
4. ACCURACY (Levels C, D, and E)	
MS/MSD samples analyzed?	
MS/MSD results acceptable?	Yes 🔞 N/A
MS/MSD standards NIST traceable? (Levels D, E)	Yes No 🕅
MS/MSD standards expired? (Levels D, E)	Yes No (V)
LCS/BSS samples analyzed?	Ye No N/A
LCS/BSS results acceptable?	Yes No N/A
Standards traceable? (Levels D, E)	Yes No (N/A)
Standards expired? (Levels D, E)	
Transcription/calculation errors? (Levels D, E)	Yes No NA
Performance audit sample(s) analyzed?	Yes (No) N/A
Performance audit sample results acceptable?	
Comments: Quitinony 4990 Jak _ usts	NO PAS
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	<u></u>

5,	PRECISION (Levels C, D, and E)	
Duplica	ate RPD values acceptable?	Yes No N/A
Duplica	ate results acceptable?	Yes No NA
MS/MS	SD standards NIST traceable? (Levels D, E)	Yes No (NA)
MS/MS	SD standards expired? (Levels D, E)	Yes No N/A
	luplicate RPD values acceptable?	
Field s	plit RPD values acceptable?	Yes No (\$1/4)
	ription/calculation errors? (Levels D, E)	
Comm	ents:	
		
6.	ICP QUALITY CONTROL (Levels D and E)	\wedge
ICP se	erial dilution samples analyzed?	Yes No 1 N/A
	erial dilution %D values acceptable?	
ICP po	ost digestion spike required?	Yes No N/A
ICP po	ost digestion spike values acceptable?	Yes No N/A
	ards traceable?	
Standa	ards expired?	Yes No N/
Transe	cription/calculation errors?	Yes No N/A
Comn	nents:	<u>V</u>

7.	FURNACE AA QUALITY CONTR	OL (Levels D and E)	1	\sim
Dupli	cate injections performed as required?	Yes	No	N/A
Dupli	icate injection %RSD values acceptable?	Yes	No	N/A
Analy	tical spikes performed as required?	Yes	No	N/A
Analy	ytical spike recoveries acceptable?	Yes	No	N/A
Stand	lards traceable?	Yes	No	N/A
Stand	lards expired?	Yes	No	N/A
MSA	performed as required?	Yes	No	N/A
MSA	results acceptable?	Yes	No	N/A
Trans	scription/calculation errors?	Yes	No	N/A
Com	ments:			$\stackrel{\smile}{=}$
8.	HOLDING TIMES (all levels)			2712
-	•			N/A
Sam	ple holding times acceptable?		No	N/A
Com	ments:	· · · · · · · · · · · · · · · · · · ·		
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	•			

9. RESULT QUANTITATION AND DETECTION LIMITS (all levels)	1		
Results reported for all requested analyses?	. (es)	No	N/A
Rresults supported in the raw data? (Levels D, E)			
Samples properly prepared? (Levels D, E)	. Yes	No	N/A
Detection limits meet RDL?	. Yes	(P)	N/A
Transcription/calculation errors? (Levels D, E)	. Yes	No	(VA
Comments: H3 - Silve ore			
Continue - Noork			
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Appendix 6

Additional Documentation Requested by Client

INORGANICS PRECISION REPORT 06/22/05

CLIENT: TNUHANFORD B05-018 H3206 WORK ORDER: 11343-606-001-9999-00

			INITIAL			DILUTION
SAMPLE	SITE ID	analyte	RESULT	REPLICATE	RPD	FACTOR (REP)
*****	**********			255;±27c±	THEETHH	
-013REP	J03CH3	Silver, Total	0.43u	0.43u	NC	6.0
•		Arsenic, Total	2.7	2.4	11.8	6.0
	•	Boron, Total	2.4	1.3	59.5	6.0
		Barium, Total	90.1	78.6	13.6	6.0
	•	Beryllium, Tobal	.0.38	0.36	7.7	6.0
		Cadmium, Total	0.14u	0.14u	NC	6.0
		Cobalt, Total	8.1	7.3	10.4	6.0
		Chromium, Total	9,0	8.2	9.3	6.0
		Copper, Total	12.7	10.7	17.1	6.0
	•	Mercury, Total	0.02u	0.01u	NC	1.0
		Manganese, Total	391	336	15.0	6.0
		Molybdenum, Total	0.76u	0.76u	NC	6.0
	•	Nickel, Total	11.4	9.4	19.2	6.0
		Lead, Total	4.7	3.2	38.0	6.0
		Antimony, Total	1.9 u	1.9 u	NC	6.0
		Selenium, Total	2.3 u	2.3 u	NC	6.0
		Vanadium, Total	51.9	45.5	13.1	6.0
		Zinc, Total	46.6	41.5	11.6	6.0

INORGANICS LABORATORY CONTROL STANDARDS REPORT 06/22/05

CLIENT: TNUHANFORD B05-018 H3206 WORK ORDER: 11343-606-001-9999-00

			SPIKED	SPIKED		
SAMPLE	SITE ID	ANALYTE	Sample	TRUOMA	UNITS	*RECOV
			*****	*****		
LCS1	05L0334-LC1	Silver, LCS	49.8	50.0	MG/KG	99.6
		Arsenic, LCS	955	1000	MG/KG	95.5
	•	Boron, LCS	479	500	MG/KG	95.8
		Barium, LCS	497	500	MG/KG	99.4
		Beryllium, LCS	24.6	25.0	MG/KG	98.4
	4	Cadmium, LCS	24.8	25.0	MG/KG	99.2
		Cobalt, LCS	252	250	MG/KG	100.9
	·	Chromium, LCS	50.6	50.0	MG/KG	101.2
		Copper, LCS	127	125	MG/KG	101.8
		Manganese, LCS	76.0	75.0	MG/KG	101.3
		Molybdenum, LCS	508	500	MG/KG	101.6
		Nickel, LCS	201	200	MG/KG	100.6
		Lead, LCS	250	250	MG/KG	100.2
		Antimony, LCS	295	300	MG/KG	98.5
		Selenium, LCS	932	1000	MG/KG	93.2
		Vanadium, LCS	246	250	MG/KG	98.6
		Zinc, LCS	99.3	100	MG/KG	99.3
LCS1	05C0142-LC1	Mercury, LCS	6.4	6.2	MG/KG	102.7

INORGANICS ACCURACY REPORT 06/22/05

CLIENT: TNUHANFORD B05-018 H3206 WORK ORDER: 11343-606-001-9999-00

			SPIKED	INITIAL	SPIKED		DILUTION
SAMPLE	SITE ID	ANALYTE	SAMP <u>LE</u>	RESULT	TRUOMA	RECOV	FACTOR (SPK)
******	***********	*********	******	*****			*******
-013	J03CH3	Silver, Total	3.8	0.43u	3.9	97.4	6.0
		Armenic, Total	158	2.7	157	98.8	6.0
		Boron, Total	72.9	2.4	78.5	89.7	6.0
		Barium, Total	226	90.1	157	86.6	6.0
•		Beryllium, Total	4.3	0.38	3.9	100.4	6.0
		Cadmium, Total	3.9	0.14u	3.9	100	6.0
		Cobalt, Total	46.4	8.1	39.2	97.7	6.0
		Chromium, Total	23.9	9.0	15.7	94.9	6.0
		Copper, Total	30.8	12.7	19.6	92.3	.6.0
		Mercury, Total	0.16	0.02u	0.16	105.2	1.0
		Manganese, Total	390	391	39.2	-3.1*	€.0
		Molybdenum, Total	76.3	0.76u	78.5	97.2	6.0
	•	Nickel, Total	48.7	11.4	39.2	95.2	6.0
	•	Lead, Total	42.0	4.7	39.2	95.2	6.0
		Antimony, Total	19.2	1.9 u	39.2	49.0	6.0
		Selenium, Total	153	2.3 u	157	97.6	6.0
	,	Vanadium, Total	89.8	51.9	39.2	96.7	6.0
		Zinc, Total	80.6	46.6	39.2	86.7	6.0

INORGANICS METHOD BLANK DATA SUMMARY PAGE 06/22/05

CLIENT: TNUHANFORD B05-018 H3206 WORK ORDER: 11343-606-001-9989-00

					REPORTING	DILUTION
SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	LIMIT	FACTOR
*****	*******		=======	*****	=======	*****
BLANK1	05L0334-MB1	Silver, Total	0.09 u	MG/KG	0.09	1.0
		Armenic, Total	0.45 u	MG/KG	0.45	1.0
		Boron, Total	0.23 u	MG/KG	0.23	1.0
		Barium, Total	0.05	MG/KG	0.02	1.0
		Beryllium, Total	0.01 u	MG/KG	0.01	1.0
		Cadmium, Total	0.03 u	MG/KG	0.03	1.0
		Cobalt, Total	0.09 u	MG/KG	0.09	1.0
		Chromium, Total	0.07 u	MG/KG	0.07	1.0
		Copper, Total	0.08 u	MG/KG	0.08	1.0
	•	Manganese, Total	0.02	MG/KG	0.02	1.0
		Molybdenum, Total	0.16 u	MG/KG	0.16	1.0
		Nickel, Total	0.22 u	MG/KG	0.22	1.0
		Lead, Total	0.25 u	MG/KG	0.25	1.0
		Antimony, Total	0.40 u	MG/KG	0.40	1,ò
	•	Selenium, Total	0.49 u	MG/KG	0.49	1.0
	•	Vanadium, Total	0.06 u	MG/KG	0.06	1.0
•	•	Zinc, Total	0.05	MG/KG	0.05	1.0
BLANK1	05C0142-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0